ORDER NO. ARD82050141C8-24

Service Manual

Cassette Deck

RS-M275X

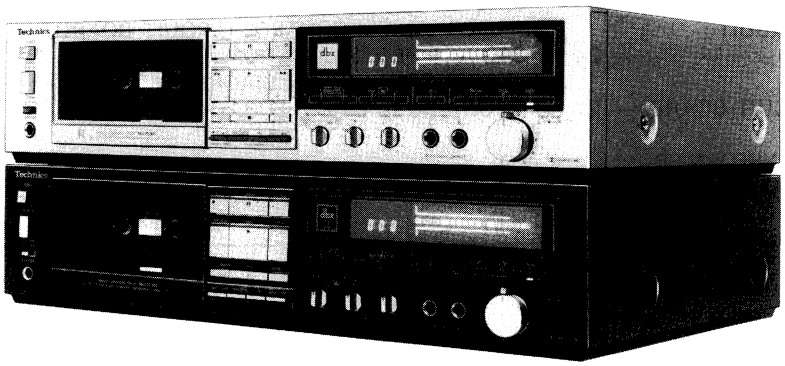
(Silver Face
Black Face)

dbx -Equipped Direct Drive
Stereo Cassette Deck

DOLBY B•C NR

This is the Service Manual for the following areas.

- [D] ..... For all European areas except United Kingdom.
- [B] ..... For United Kingdom.
- [N] ..... For Asia, Latin America, Middle East and Africa areas.



RS-M250 MECHANISM SERIES

Specifications

Track system:	4-track 2-channel stereo recording and playback
Tape speed:	4.8 cm/s
Wow and flutter:	0.03% (WRMS), ±0.07% (DIN)
Frequency response:	Metal tape; 20—20,000 Hz 25—19,000 Hz (DIN) 30—18,000 Hz ±3 dB
	CrO_2 tape; 20—19,000 Hz 25—18,000 Hz (DIN) 30—17,000 Hz ±3 dB
	Normal tape; 20—18,000 Hz 25—17,000 Hz (DIN) 30—16,000 Hz ±3 dB
Dynamic range:	110 dB (at 1 kHz), dbx in
Max. input level improvement:	10 dB or more improved with dbx in (at 1 kHz)
Signal-to-noise ratio:	dbx* in; 92 dB Dolby** C NR in; 76 dB (CCIR) Dolby B NR in; 68 dB (CCIR) NR off; 58 dB (signal level = max. input level A weighted, CrO_2 type tape)
Fast forward and rewind time:	Approx. 90 seconds with C-60 cassette tape
Inputs:	MIC; sensitivity 0.25 mV, applicable microphone impedance 400 Ω—10 kΩ LINE; sensitivity 60 mV, input impedance more than 47 kΩ
Outputs:	LINE; output level 700 mV, output impedance 1.5 kΩ or less HEADPHONES; output level 130 mV (8 Ω) applicable headphone impedance 8 Ω—600 Ω
Bias frequency:	85 kHz
Motor:	3-motor system 1-FG servo controlled direct-drive motor 2-DC motors for reel-table drive
Heads:	2-head system 1-AX (AMORPHOUS) head for record/playback 1-double-gap ferrite head for erasure
Power requirement:	110/125/220/240 V, 50-60 Hz Pre-set power voltage 220 V Pre-set power voltage 240 V for United Kingdom
Power consumption:	37 W
Dimensions:	43.0 cm(W) × 9.8 cm(H) × 32.6 cm(D)
Weight:	6.5 kg

Specifications are subject to change without notice.

* The term dbx is a registered trademark of dbx Inc.

** 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories.

Technics

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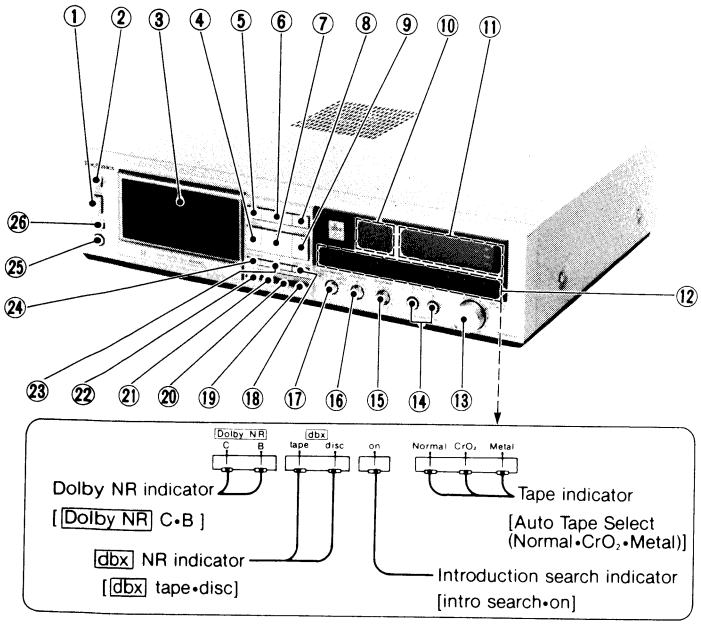
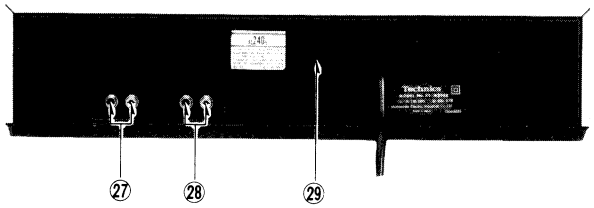
LOCATION OF CONTROLS AND COMPONENTS





① Power switch [power (push on)]
② Eject button [eject]
③ Cassette holder
④ Rewind button [rew (M · S) (◀◀)]
⑤ Record button and indicator [rec (○)]
⑥ Pause button and indicator [pause (❚❚)]
⑦ Play button and indicator [play (▶)]
⑧ Record muting button [rec mute (○)]
⑨ Fast forward button [ff (M · S) (▶▶)]
⑩ Digital multi counter [multi counter]
⑪ FL (fluorescent level) meter
⑫ Indicator
⑬ Input level controls [input level (L ⊖ R)]
⑭ Microphone jacks [mic (L · R)]
⑮ Output level control [output level]
⑯ Bias fine adjustment control [bias adjust]
⑰ Noise reduction select switch [Noise reduction (Dolby NR C · B · out · dbx tape · disc)]
⑱ Counter reset button [counter reset]
⑲ Music select button [music select]
⑳ Set button [set]
㉑ Tape/time select button [tape/time]
㉒ Memory repeat button [memory repeat (off · on)]
㉓ Stop button [stop (■)]
㉔ Introduction search button [intro search]
㉕ Headphones jack [phones]
㉖ Timer start switch [timer (rec · off · play)]
㉗ Line output jacks [LINE OUT (L · R)]
㉘ Line input jacks [LINE IN (L · R)]
㉙ Voltage selector [VOLTAGE SELECTOR)

DISASSEMBLY INSTRUCTIONS

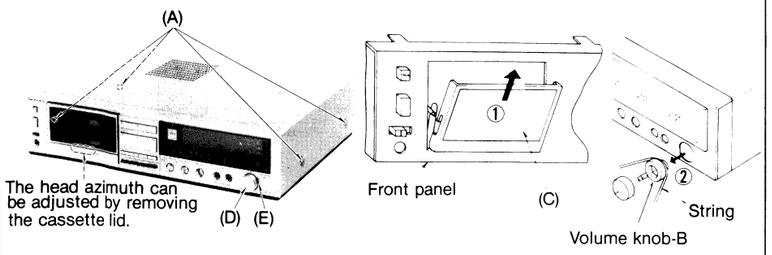


Fig. 1

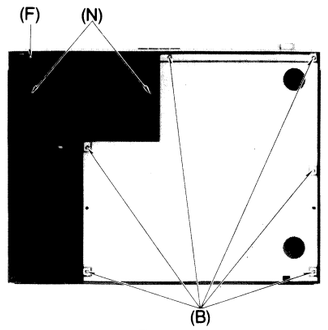


Fig. 2

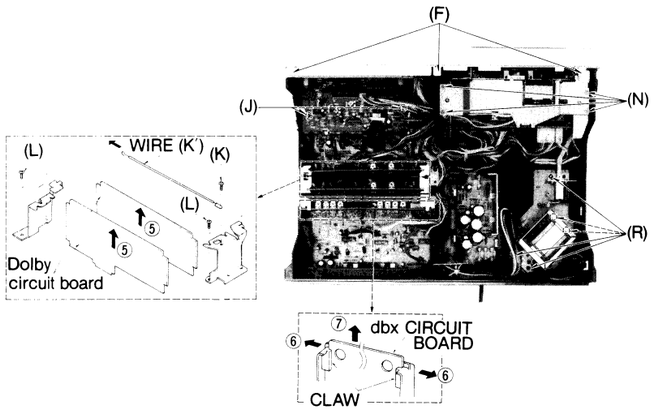


Fig. 3

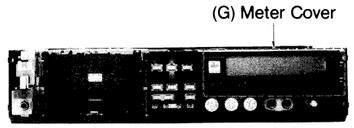


Fig. 4

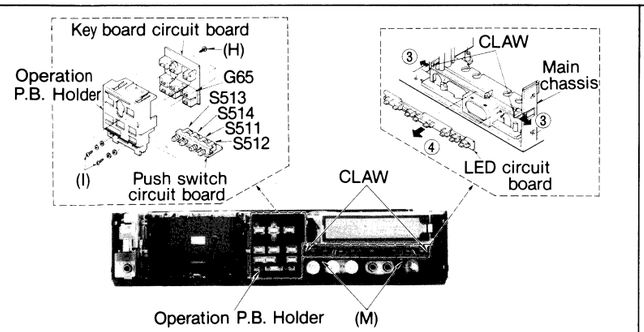


Fig. 5

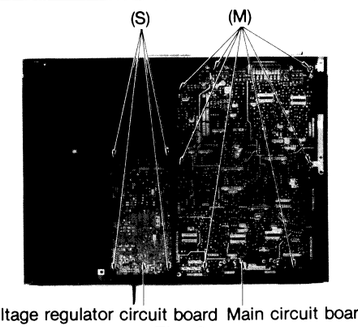


Fig. 6

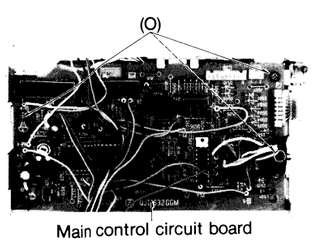


Fig. 7

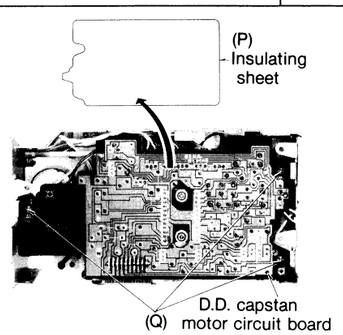


Fig. 8

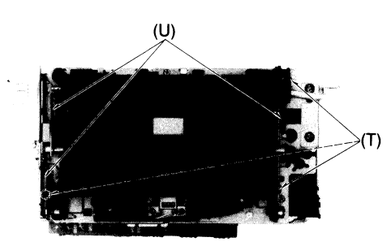


Fig. 9

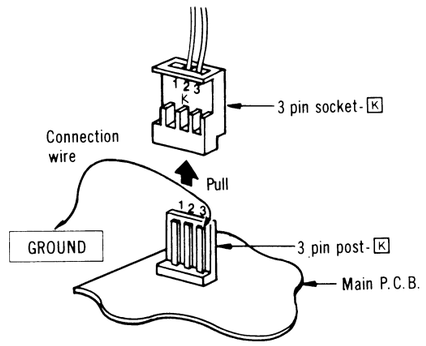
Ref. No.	Procedure	To remove —— .	Remove —— .	Shown in fig. —— .
1	1	Case cover	• 4 screws ····· (A)	1
2	2	Bottom cover	• 6 screws ····· (B)	2
3	1→2→3	Front panel	• Cassette lid ····· (C) (As shown in fig. 1, pull out in the direction of arrow ①.) • Volume knob-A ····· (D) • Volume knob-B ····· (E) (As shown in fig. 1, set a string on volume knob-B and pull it out in the direction of arrow ②.) • 4 screws ····· (F)	1 1 1 2, 3
4	1→3→4	Push switch circuit board and key board circuit board	• Meter cover ····· (G) • 3 screws ····· (H) • 2 screws ····· (I)	4 5 5
5	1→3→5	FL meter	• 2 red screws ····· (J)	3
6	1→3→5→6	LED circuit board	• As shown in fig. 5, pull the claw in the direction of arrow ③, then pull LED circuit board in the direction of arrow ④. Then, it can be removed.	5
7	1→3→7	dbx circuit board and Dolby circuit board	• 1 screw ····· (K) • Wire ····· (K)' • 2 screws ····· (L) (As shown in fig. 3, pull Dolby circuit board in the direction of arrow ⑤.) • As shown in fig. 3, pull the claw in the direction of arrow ⑥, then pull dbx circuit board in the direction of arrow ⑦. Then, it can be removed.	3 3 3 3
8	1→2→3→5→7→8	Main circuit board	• 9 red screws ····· (M)	5, 6
9	1→3→9	Mechanism unit	• 6 screws ····· (N) (As shown in fig. 5, pull out operation P.B. holder.)	2, 3
10	1→3→9→10	Main control circuit board	• 3 screws ····· (O)	7
11	1→3→9→10→11	D.D capstan motor circuit board	• Insulating sheet ····· (P) • 3 screws ····· (Q)	8 8
12	1→12	Power transformer circuit board	• 5 screws ····· (R)	3
13	1→13	Voltage regulator circuit board	• 4 screws ····· (S)	6
14	1→3→9→14	Cassette holder assembly	• 3 screws ····· (T) • Lock lever spring ····· (U)	9 9

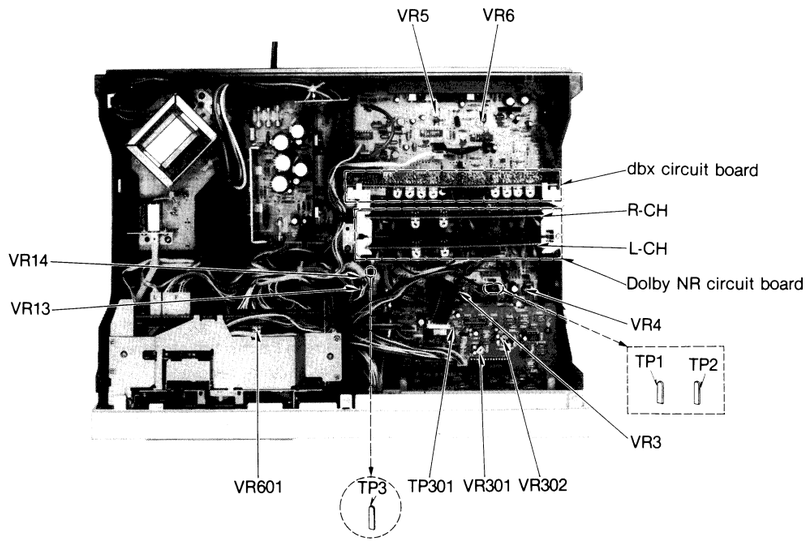
MEASUREMENT AND ADJUSTMENT METHODS
(WITHOUT dbx SYSTEM)

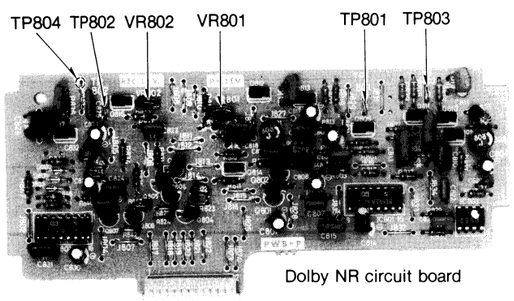
Tape selector (Tape mode switching)

For measurement adjustment with test tapes without tape detection holes (A and B), switch tape modes as follows.
(For normal tape mode, just insert a normal tape into the cassette holder.)

* **Metal tape mode setting:**
  Metal tape mode is obtained by disconnecting the 3 pin socket [K] from the 3 pin post [K] on the P.C.B. (Printed Circuit Board).
* **CrO_2 tape mode setting:**
  First, disconnect the 3 pin socket [K] in the same way as above. Then, as illustrated in the figure right, connect the terminal-3 of the 3 pin post to the ground with a connection wire.







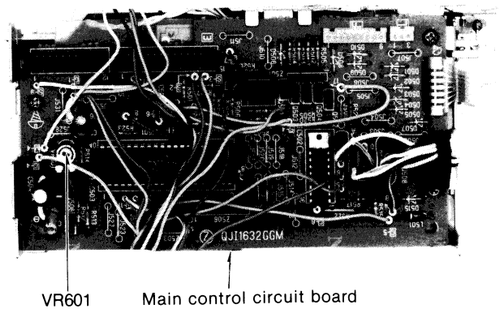
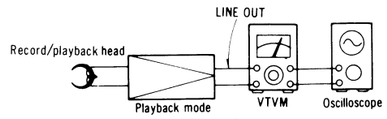
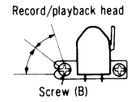
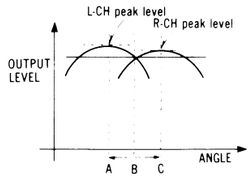
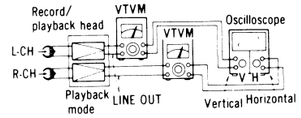
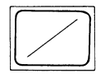
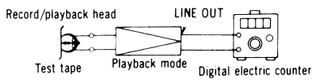
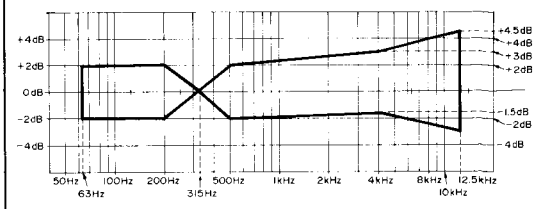
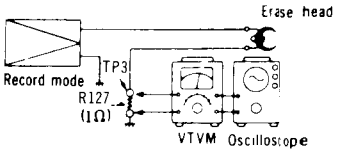
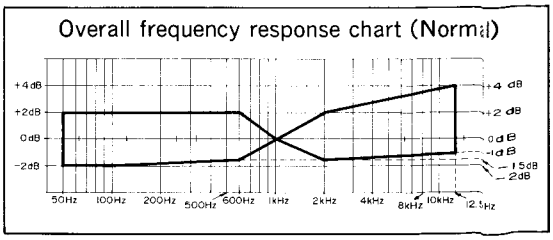


Fig. 1

NOTES: Keep good condition, set switches and controls in the following positions, unless otherwise specified.

- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature: 20±5°C (68±9°F)
- NR switch: OUT
- Timer start switch: OFF
- Intro search: OFF
- Input level controls: Maximum
- Output level control: Maximum
- Bias fine adjustment control: Center

ITEM	MEASUREMENT & ADJUSTMENT
Ⓐ Head azimuth adjustment Condition: • Playback mode Equipment: • VTVM • Oscilloscope • Test tape (azimuth) ··· QZZCFM	**L-CH/R-CH output balance adjustment** 1. Make connections as shown in fig. 2.  Fig. 2 2. Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (B) in fig. 3 for maximum output L-CH and R-CH levels. When the output levels of L-CH and R-CH are not at maximum at the same time, readjust as follows. 3. Turn the screw shown in fig. 3 to find angles A and C (points where peak output levels for left and right channels are obtained). Then, locate the angle B between angles A and C, i.e., a point where L-CH and R-CH output levels come together at maximum. (Refer to figs. 3 and 4.)  Fig. 3  Fig. 4 **L-CH/R-CH phase adjustment** 4. Make connections as shown in fig. 5. 5. Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (B) shown in fig. 3 so that pointers of the two VTVMs swing to maximum and a waveform as illustrated in fig. 6 is obtained on the oscilloscope.  Fig. 5  Fig. 6
Ⓑ Tape speed Condition: • Playback mode • Normal tape mode Equipment: • Digital electronic counter • Test tape ··· QZZCWAT	**Tape speed accuracy** 1. Test equipment connection is shown in fig. 7. 2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter. 3. Take measurement at middle section of tape. 4. Measure this frequency. 5. On the basis of 3,000Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f - 3{,}000}{3{,}000} \times 100\ (\%)$ where, f = measured value  Fig. 7 **Standard value: ± 0.4%** **Adjustment method** 1. Playback the test tape (middle). 2. Adjust so that frequency becomes 3,000Hz. 3. Tape speed adjustment VR (VR601) shown in fig. 1. **Tape speed fluctuation** Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows: $\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3{,}000} \times 100\ (\%)$ f_1 = maximum value, f_2 = minimum value **Standard value: Less than 0.3%**

ITEM	MEASUREMENT & ADJUSTMENT
Ⓒ Playback frequency response Condition: * Playback mode * Normal tape mode Equipment: * VTVM * Oscilloscope * Test tape ··· QZZCFM	1. Test equipment connection is shown in fig. 2. 2. Place UNIT into playback mode. 3. Playback the frequency response test tape (QZZCFM). 4. Measure output level at 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz, and compare each output level with the standard frequency 315Hz, at LINE OUT. 5. Make measurement for both channels. 6. Make sure that the measured value is within the range specified in the frequency response chart. (Shown in fig. 8.) Playback frequency response chart  Fig. 8
Ⓓ Playback gain Condition: * Playback mode * Normal tape mode Equipment: * VTVM * Oscilloscope * Test tape ··· QZZCFM	1. Test equipment connection is shown in fig. 2. 2. Playback standard recording level portion on test tape (QZZCFM 315Hz, 0dB), and using VTVM measure the output level at LINE OUT jack. 3. Make measurement for both channels. Standard value: 0.7V±0.1dB (around 0.42V: at test points TP802 (L-CH) and TP802 (R-CH)) **Adjustment** 1. If measured value is not within standard, adjust VR3 (L-CH), VR4 (R-CH) (shown in fig. 1). 2. After adjustment, check "Playback frequency response" again.
Ⓔ Erase current Condition: * Record mode * Metal tape mode Equipment: * VTVM * Oscilloscope	1. Test equipment connection is shown in fig. 9. 2. Place UNIT into metal tape mode. 3. Press the record and pause buttons. 4. Read voltage on VTVM and calculate erase current by following formula: $\text{Erase current (A)} = \frac{\text{Voltage across both ends of R127}}{1\ (\Omega)}$  Fig. 9 Standard value: 150^{+15}_{-10} mA (Metal position) 5. If measured value is not within standard, adjust as follows. **Adjustment** 1. Open the point (B) and short the point (A) on the main circuit board in the circuit board diagram (See page 27). 2. Make measurement for erase current. 3. Make sure that the measured value is within the erase current of 140mA to 170mA. 4. If it is beyond the value, carry out the following adjustments: • If the erase current is less than 140mA, open the point (A). • If the erase current is more than 165mA, short the points (A) and (B).
Ⓕ Overall frequency response Condition: * Record/playback mode * Normal tape mode * CrO_2 tape mode * Metal tape mode * Input level controls ··· MAX * Output level control ··· MAX	**Note:** Before measuring and adjusting, make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response). **Overall frequency response adjustment by recording bias current** (Recording equalizer is fixed) 1. Make connections as shown in fig. 11. 2. Place UNIT into normal tape mode and load the test tape (QZZCRA). Overall frequency response chart (Normal)  Fig. 10

ITEM	MEASUREMENT & ADJUSTMENT

Equipment:
- * VTVM
- * AF oscillator
- * ATT
- * Oscilloscope
- * Resistor (600 Ω)
- * Test tape (reference blank tape)
  - ··· QZZCRA for Normal
  - ··· QZZCRX for CrO_2
  - ··· QZZCRZ for Metal

3. Input a 1kHz, −24 dB signal through LINE IN.
   Place the set in record mode.
4. Fine adjust the attenuator to obtain 0.7 V LINE OUT output.
   * Make sure that the input signal level is −24 ± 4 dB with 0.7 V output voltage.
5. Adjust the attenuator to reduce the input signal level by 20 dB.
6. Adjust the AF oscillator to generate 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz and 12.5 kHz signals, and record these signals on the test tape.
7. Playback the signals recorded in step 6, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 10).
   (If the curve is within the charted specifications, proceed to steps 8, 9, 10 and 11.)
   If the curve is not within the charted specifications, adjust as follows;

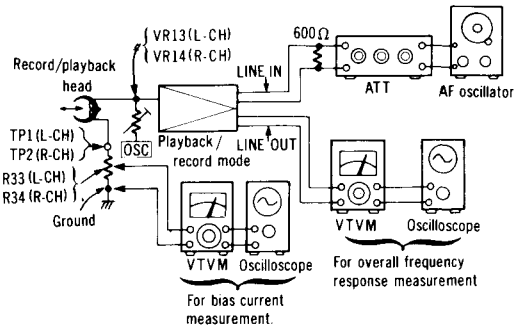


Fig. 11

Adjustment Ⓐ:

When the curve exceeds the overall frequency response chart specifications (fig. 10) as shown in fig. 12.

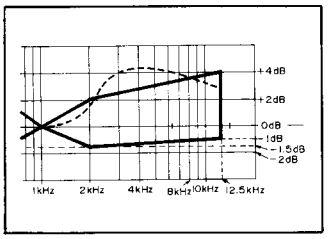


Fig. 12

1) Increase bias current by turning VR13 (L-CH) and VR14 (R-CH).
   (See fig. 1 on page 5).
2) Repeat steps 6 and 7 to confirm.
   (Proceed to steps 8, 9, 10 and 11 if the curve is now within the charted specifications is fig. 10.)
3) If the curve still exceeds the specifications (fig. 10), increase bias current further and repeat steps 6 and 7.

Adjustment Ⓑ:

When the curve falls below the overall frequency response chart specifications (fig. 10) as shown in fig. 13.

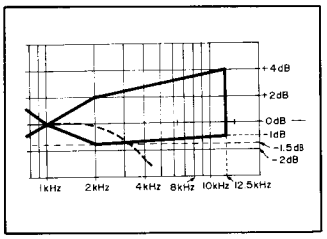


Fig. 13

1) Reduce bias current by turning VR13 (L-CH) and VR14 (R-CH).
2) Repeat steps 6 and 7 to confirm.
   (Proceed to steps 8, 9, 10 and 11 if the curve is now within the charted specifications in fig. 10.)
3) If the curve still falls below the charted specifications (fig. 10), reduce bias current further and repeat steps 6 and 7.

8. Place UNIT into CrO_2 tape mode.
9. Change test tape to QZZCRX, and record 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz and 12.5 kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for CrO_2 tapes (fig. 14).

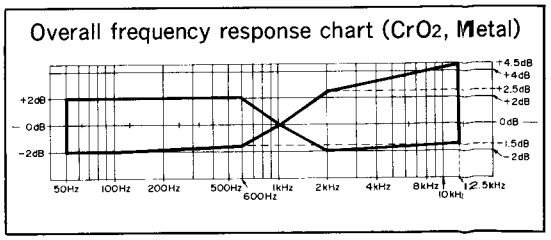
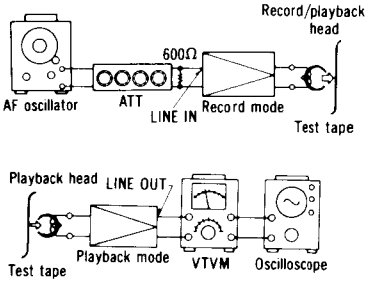
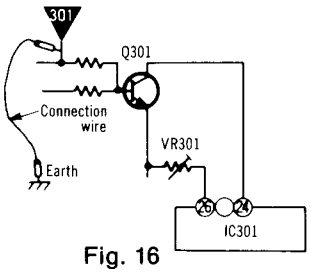
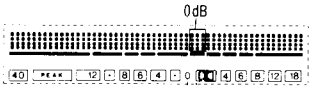
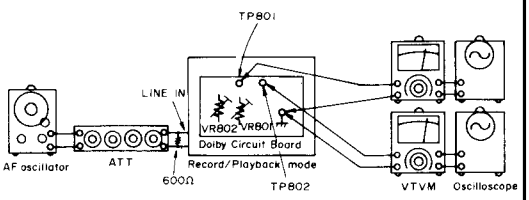
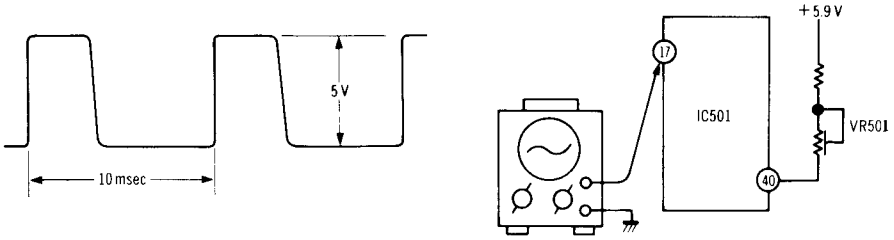
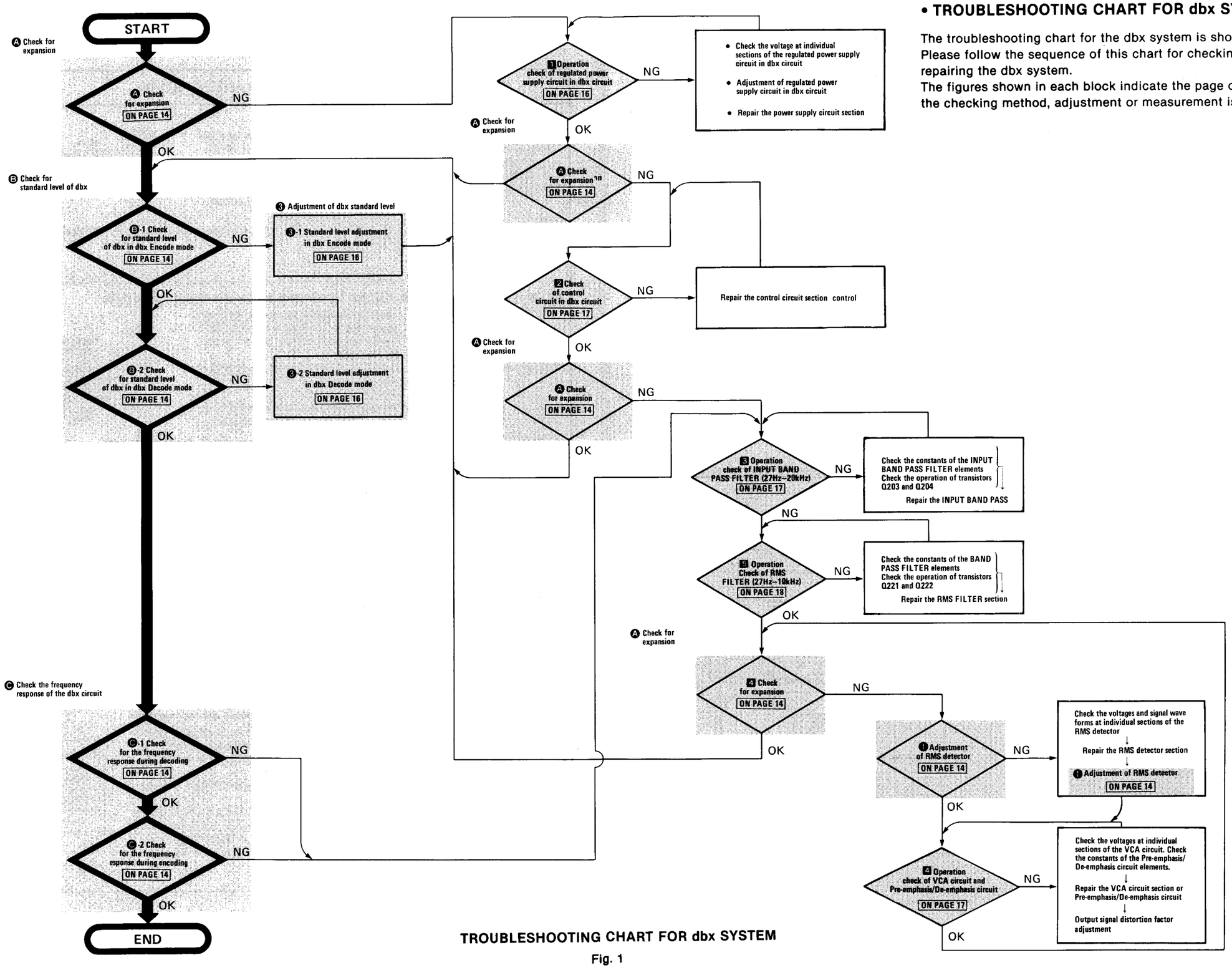


Fig. 14

ITEM	MEASUREMENT & ADJUSTMENT
	10. Place UNIT into metal tape mode change test tape to QZZCRZ, and record 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz and 12.5kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for metal tapes (fig. 14). 11. Confirm that bias currents are approximately as follows when the UNIT is set at different tape mode. * Read voltage on VTVM and calculate bias current by following formula: $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10\ (\Omega)}$ **Standard value:** **around 180μA (Normal position)** **around 250μA (CrO_2 position)** **around 380μA (Metal position)** }: **measured at TP1 (L-CH) and TP2 (R-CH)**
G Overall gain Condition: * Record/playback mode * Normal tape mode * Input level controls ··· MAX * Output level control ··· MAX * Standard input level; MIC ····· −72±3dB LINE IN ··· −24±3dB Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω) * Test tape (reference blank tape) ··· QZZCRA for Normal	1. Test equipment connection is shown in fig. 15. 2. Place UNIT into normal tape mode, and load the test tape (QZZCRA). 3. Place UNIT into record mode. 4. Supply 1kHz signal (−24dB) from AF oscillaror, through ATT to LINE IN. 5. Adjust ATT until monitor level at LINE OUT becomes 0.7V. 6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.7V. 7. If measured value is not 0.7V, adjust VR7 (L-CH), VR8 (R-CH). 8. Repeat from step (2).  Fig. 15
H Fluorescent meter Condition: * Record mode * Input level controls ··· MAX * Output level control ··· MAX Equipment: * VTVM * AF oscillator * ATT	1. Make connections as shown (See fig. 15). 2. Connect a wire between TP301 and ground terminal (See fig. 16). 3. In the recording pause mode, apply 1kHz (−24dB) to LINE IN. 4. Adjust ATT so that output level at LINE OUT is 0.7V. **−40dB adjustment** 5. Adjust ATT so that the level adjusted at step 4 is reuced by 40dB. 6. At this time, check that −40dB indicator is lighted halfway (intermediate brightness between full brightness and light-out: See fig. 17). 7. If the indicator is not lighted halfway as described in step 6, adjust VR302. **0dB adjustment** 8. Restore the condition of step 4 (set LINE OUT output level to 0.7V). 9. At this time, check that 0dB indicator is lighted halfway (intermediate brightness between full brightness and light-out: See fig. 18). 10. If improper, adjust VR301. 11. Repeat adjustments and checks at steps 4, 5, 6, 7, 8, 9 and 10 two or three times. 12. Disconnect the wire between TP301 and ground terminal, which had been connected at step 2.  Fig. 16 Fig. 17  Fig. 18

ITEM	MEASUREMENT & ADJUSTMENT
❶ Dolby NR circuit Condition: * Record/playback mode * NR switch ··· OUT/B/C * Input level controls ··· MAX Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω) * Test tape ··· QZZCFM	Note: Two Dolby PC boards are available for the L and R channels. Refer to fig. 1 for VR location and test points. **Dolby level adjustment** **○ Encoding level adjustment** 1. Make connections as shown in fig. 19. 2. Set the NR switch to OUT and set the unit to the record mode. 3. Apply a 400Hz signal from the LINE IN, and adjust the ATT so that the output signal level at TP801 is 0.42V. 4. Adjust VR802 so that the output signal level at TP802 is 0.42V.  **Fig. 19** **○ Decoding level adjustment** 1. Make connections as shown in fig. 19. 2. Set the NR switch to OUT and play the QZZCFM test tape (315Hz, 0dB). 3. Adjust VR3 (L-CH) and VR4 (R-CH) so that the output signal level at TP802 is 0.42V. 4. Adjust VR801 so that the output signal level at TP801 is 0.42V. **Checking Dolby circuit frequency response** **○ Dolby-B (Encoding characteristics check)** 1. Make connections as shown in fig. 19. 2. Set the NR switch to OUT and set the unit to the record mode. 3. Apply a 400Hz signal from the LINE IN, and adjust the ATT so that the output signal level at TP801 is 17.5mV. 4. Change the input signal frequency to 1kHz, and set the output signal level at TP804 to 0dB. Measure the level when the NR switch is set to B, and check that the level difference is 6±1.5dB. 5. Check the level difference in the same way as step 4 above using a 5kHz signal. The output signal level difference between Dolby-B IN and OUT should be 8±1.5dB. **○ Dolby-C (Check of Encoding characteristics)** Check characteristics in the same way as for Dolby-B (Encoding characteristics check). In this case, however, OUT/Dolby-C selection positions are available for the NR switch, and the output signal level difference should be 11.5±1.5dB at 1kHz and 9.0±1.5dB at 5kHz.
❷ Input scanning time adjustment Condition: * Stop mode Equipment: * Oscilloscope	1. Connect oscilloscope to ⑰ terminal of IC501. 2. Measure the time of input scanning signal with oscilloscope as shown in fig. 20. Standard value: About 10 msec 3. If the measured value is markedly different from the signal shown below, make the necessary adjustment with VR501.  **Fig. 20**

MEASUREMENT AND ADJUSTMENT METHODS (FOR dbx SYSTEM)


START
Ⓐ Check for expansion
Ⓐ Check for expansion
ON PAGE 14
NG
OK
Ⓑ Check for standard level of dbx
Ⓑ-1 Check for standard level of dbx in dbx Encode mode
ON PAGE 14
NG
❸ Adjustment of dbx standard level
❸-1 Standard level adjustment in dbx Encode mode
ON PAGE 16
OK
Ⓑ-2 Check for standard level of dbx in dbx Decode mode
ON PAGE 14
NG
❸-2 Standard level adjustment in dbx Decode mode
ON PAGE 16
OK
Ⓒ Check the frequency response of the dbx circuit
Ⓒ-1 Check for the frequency response during decoding
ON PAGE 14
NG
OK
Ⓒ-2 Check for the frequency esponse during encoding
ON PAGE 14
NG
OK
END
❶ Operation check of regulated power supply circuit in dbx circuit
ON PAGE 16
NG
• Check the voltage at individual sections of the regulated power supply circuit in dbx circuit
• Adjustment of regulated power supply circuit in dbx circuit
• Repair the power supply circuit section
Ⓐ Check for expansion
OK
Ⓐ Check for expansion
ON PAGE 14
NG
❷ Check of control circuit in dbx circuit
ON PAGE 17
NG
Repair the control circuit section control
Ⓐ Check for expansion
OK
Ⓐ Check for expansion
ON PAGE 14
NG
OK
❸ Operation check of INPUT BAND PASS FILTER (27Hz–20kHz)
ON PAGE 17
NG
Check the constants of the INPUT BAND PASS FILTER elements
Check the operation of transistors Q203 and Q204
Repair the INPUT BAND PASS
NG
❺ Operation Check of RMS FILTER (27Hz–10kHz)
ON PAGE 18
NG
Check the constants of the BAND PASS FILTER elements
Check the operation of transistors Q221 and Q222
Repair the RMS FILTER section
OK
Ⓐ Check for expansion
❹ Check for expansion
ON PAGE 14
NG
OK
❶ Adjustment of RMS detector
ON PAGE 14
NG
Check the voltages and signal wave forms at individual sections of the RMS detector
Repair the RMS detector section
❶ Adjustment of RMS detector
ON PAGE 14
OK
❹ Operation check of VCA circuit and Pre-emphasis/De-emphasis circuit
ON PAGE 17
NG
Check the voltages at individual sections of the VCA circuit. Check the constants of the Pre-emphasis/ De-emphasis circuit elements.
Repair the VCA circuit section or Pre-emphasis/De-emphasis circuit
Output signal distortion factor adjustment
OK

TROUBLESHOOTING CHART FOR dbx SYSTEM

Fig. 1

• TROUBLESHOOTING CHART FOR dbx SYSTEM

The troubleshooting chart for the dbx system is shown in Fig. 1. Please follow the sequence of this chart for checking and repairing the dbx system.
The figures shown in each block indicate the page on which the checking method, adjustment or measurement is explamed.

• ADJUSTMENT PARTS LOCATION OF dbx SYSTEM

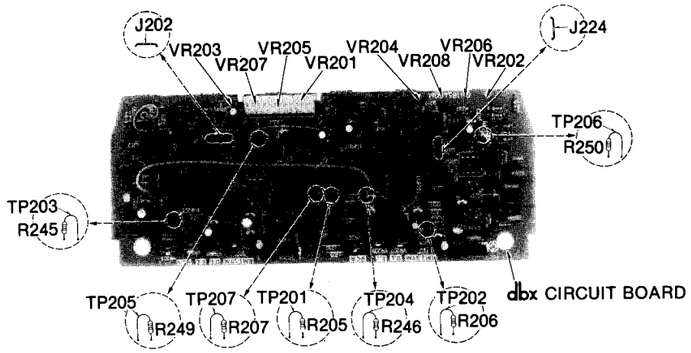


Fig. 2

BLOCK DIAGRAM OF dbx SECTION (L-CH ONLY)

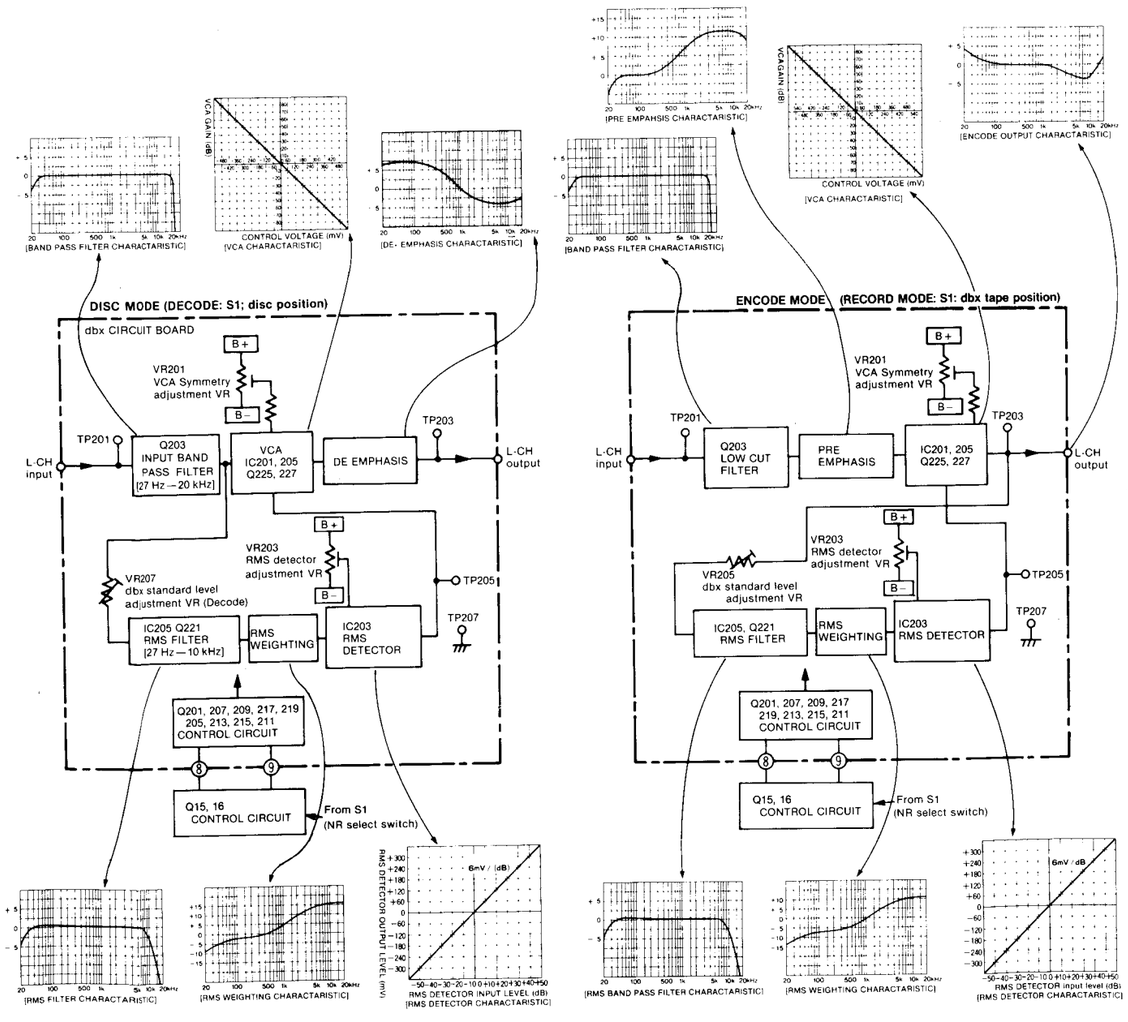


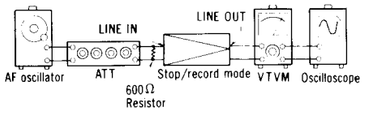
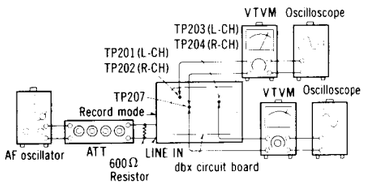
Fig. 3

Note: Encode/decode selection of the dbx circuit in RS-M275X is done with a control circuit, composed of transistors. (This control circuit is interlocked with S1 (NR selection switch).)

dbx SYSTEM CHECKING METHOD

NOTES: Keep good condition, set switches and controls in the following positions, unless otherwise specified.

- Input level controls: Maximum
- Output level control: Maximum

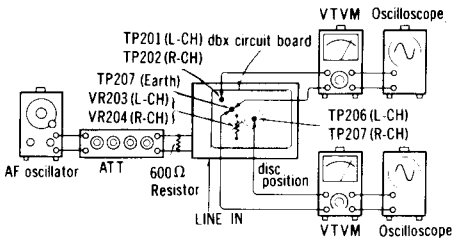
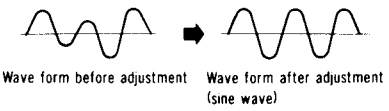
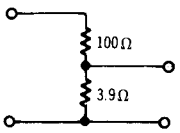
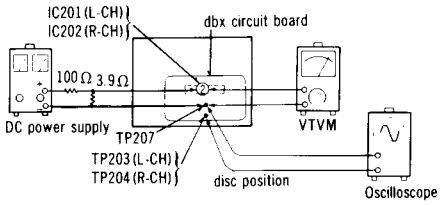
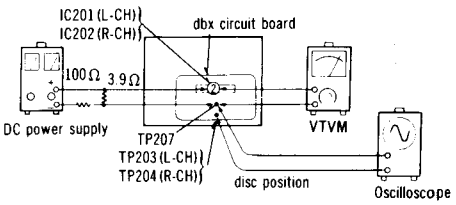
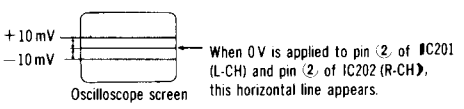
ITEM	CHECKING METHOD
Ⓐ Check for expansion Condition: * Stop mode * Input level controls ··· MAX * Output level control ··· MAX * Noise reduction selector ··· disc / dbx tape Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω)	**Ⓐ Check for expansion** 1. Make the connections as shown in fig. 4 and apply 1 kHz – 27 dB signal from LINE IN, and set the noise reduction selector to disc position. 2. Adjust ATT, increase input signal level by 10 dB, and make sure that the reading for VTVM increases by 20 dB ± 1 dB. 3. Adjust ATT, decrease the input signal level, and make sure that the reading for VTVM decreases by 20 dB ± 1 dB.  Fig. 4
Ⓑ Check for standard level of dbx Condition: * Stop / record mode * Input level controls ··· MAX * Noise reduction selector ··· disc / dbx tape Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω)	**Ⓑ-1 Check for standard level of dbx in dbx Encode mode** 1. Make the connections as shown in fig. 5 and apply 1 kHz – 27 dB signal from LINE IN, and set the noise reduction selector to dbx tape position. 2. Set the unit to record mode, adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300 mV. 3. Make sure that the signal level at TP203 (L-CH) and TP204 (R-CH) is 300 mV ± 0.5 dB.  Fig. 5 **Ⓑ-2 Check for standard level of dbx in dbx Decode mode** 1. Make the connections as shown in fig. 5 and apply 1 kHz – 27 dB signal from LINE IN, and check as follows: 2. Set the noise reduction selector to disc position and adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) becomes 300 mV. 3. Make sure that the signal level at TP203 (L-CH) and TP204 (R-CH) is 300 mV ± 0.5 dB.
Ⓒ Check the frequency response of the dbx circuit Condition: * Stop / record mode * Input level controls ··· MAX * Noise reduction selector ··· disc / dbx tape Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω)	**Ⓒ-1 Check the frequency response during decoding** 1. Make the connections as shown in fig. 5 and apply 1 kHz – 27 dB signal from LINE IN, and check as follows: 2. Set the noise reduction selector to disc position, and adjust ATT so that te signal level at TP201 (L-CH) and TP202 (R-CH) becomes 300 mV. 3. With the signal level at TP203 (L-CH) and TP204 (R-CH) as 0 dB, change the signal frequency to 100 Hz, 20 Hz and 7 kHz respectively. Read signal levels at TP203 (L-CH) and TP204 (R-CH) and check that they are within the specifications-1. Specifications-1 Frequency / Signal levels at TP203 and TP204 1 kHz / 0 dB (300 mV) 100 Hz / – 0.5 dB ± 1 dB 20 Hz / – 30 dB ± 5 dB 7 kHz / + 7 dB ± 1 dB **Ⓒ-2 Check the frequency response during encoding** 1. Make the connections as shown in fig. 5 and apply 1 kHz – 27 dB signal from LINE IN, and check as follows: 2. Set the noise reduction selector to dbx tape position, and the unit to record mode. 3. Adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300 mV. 4. With the signal level at TP203 (L-CH) and TP204 (R-CH) as 0 dB, change the signal frequency to 100 Hz and 7 kHz respectively. Read signal levels at TP203 (L-CH) and TP204 (R-CH) and check that they are within the specifications-2. Specifications-2 Frequency / Signal levels at TP203 and TP204 1 kHz / 0 dB (300 mV) 100 Hz / + 0.5 dB ± 1 dB 7 kHz / 3.5 dB ± 1 dB

NOTES:

- If the results of the above checks Ⓐ, Ⓑ and Ⓒ do not satisfy the specifications, perform the following adjustments.
- If the specifications are not satisfied even after the adjustments, follow the checking procedure for problems.
- If the output signal is not produced or is extremely distorted, follow the checking procedure for problems.

ADJUSTMENT OF dbx SYSTEM

NOTES: When adjusting the circuit of the dbx system, be sure to perform the adjustments in the following order:
❶ Adjustment of RMS detector, ❷ Adjustment of VCA, ❸ Adjustment of dbx standard level.
Keep good condition, set switches and controls in the following positions, unless otherwise specified.
• Input level controls: Maximum

ITEM	ADJUSTMENT
❶ Adjustment of RMS detector Condition: * Stop mode * Input level controls ··· MAX * Noise reduction selector ··· disc Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω)	1. Make the connections as shown in fig. 6, and set the noise reduction selector to disc position. 2. Apply 100Hz −27dB signal from LINE IN. 3. Adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) becomes 300mV. 4. Make sure that the output signal at TP205 (L-CH) and TP206 (R-CH) is at 200Hz sine wave. If the output signal is not sinusoidal as shown in fig. 7, adjust VR203 (L-CH) and VR204 (R-CH) to make it sinusoidal. **NOTE:** The voltage of the output signal after adjustment is about 0.5mV rms.  Fig. 6  Fig. 7
❷ Adjustment of VCA Condition: * Record/stop mode * Input level controls ··· MAX * Noise reduction selector ··· disc/dbx tape Equipment: * VTVM * Oscilloscope * Resistor (100Ω, 3.9Ω)	**Preparation before adjustment** 1. Before adjusting VCA, from the device shown below using resistors of 100Ω and 3.9Ω (See fig. 8). 2. Set NR switch to dbx disc. Remove jumpers [J202 (L-CH) and J224 (R-CH)]. 3. Arrange connections referring to wire connection diagram (fig. 9 and 10), since 0V, +180mV and −180mV (DC) are applied in this order to pin 2 of IC201 (L-CH) and pin 2 of IC202 (R-CH).  Fig. 8  **Connections when applying +180mV and 0V** Adjust DC power supply and arrange connections so that +180mV or 0V can be applied to TP203 (L-CH) and TP204 (R-CH). **Fig. 9**  **Connections when applying −180mV** Adjust DC power supply and arrange connections so that −180mV can be applied to TP203 (L-CH) and TP204 (R-CH). **Fig. 10** **Adjustment procedure** 1. Apply 0V to pin ② of IC201 (L-CH) and pin ② of IC202 (R-CH), and a horizontal line will appear on the screen of the oscilloscope. Use this line as the reference line. 2. Apply +180mV to pin ② of IC201 (L-CH) and pin ② of IC202 (R-CH) (See fig. 9), and check that the level is not more than 10mV from the reference line. If improper, adjust VR201 (L-CH) and VR202 (R-CH). 3. In the same way, apply −180mV to pin ② of IC201 (L-CH) and pin ② of IC203 (R-CH) (See fig. 10), and check that the level is not more than 10mV from the reference line. If improper, adjust VR201 (L-CH) and VR202 (R-CH). 4. Repeat steps 2 and 3, and adjust VRs so that the levels are within ±10mV when +180mV and −180mV are applied (fig. 11). 5. After adjustment, connect jumpers J202 (L-CH) and J224 (R-CH) (See fig. 2).  **Fig. 11**
❸ Adjustment of dbx standard level Condition: * Record/stop mode * Input level controls ··· MAX	**NOTE:** Be sure to perform the standard level adjustment in dbx Encode, followed by the standard level adjustment in dbx Decode.

ITEM	ADJUSTMENT
* Noise reduction selector ··· disc/dbx tape Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω)	❸-1 Standard level adjustment in dbx Encode mode 1. Make the connection as shown in fig. 12 and apply 1kHz – 27dB signal from LINE IN, and set the noise reduction selector to dbx tape position. 2. Set unit to record mode, adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300mV. 3. Adjust VR205 (L-CH) and VR206 (R-CH) so that the output signal level at TP203 (L-CH) and TP204 (R-CH) becomes 300mV±0.5dB.

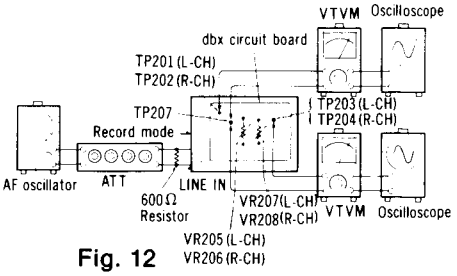


Fig. 12

❸-2 Standard level adjustment in dbx Decode mode

1. Make the connection as shown in fig. 12 and apply 1kHz –27dB signal from LINE IN, and perform the following adjustments.
2. Set the noise reduction selector to disc position, and adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) becomes 300mV.
3. Adjust VR207 (L-CH) and VR208 (R-CH) so that the output signal level at TP203 (L-CH) and TP204 (R-CH) becomes 300mV±0.5dB.

NOTES:
- After adjustments ❶, ❷ and ❸, re-check according to "dbx SYSTEM CHECKING METHOD".
- If the specifications are not satisfied, perform the adjustments again.

CHECKING PROCEDURE FOR PROBLEMS

NOTES: Find defective parts according to the circuit operation checking method given below, and use the results for your reference during repair. Remember to adjust after repair.
Keep good condition, set switches and controls in the following positions, unless otherwise specified.
- Input level controls: Maximum

ITEM	CHECKING METHOD
❶ Operation check of regulated power supply circuit in dbx circuit Equipment: * DC volt meter * Oscilloscope	❶-1 Check of +10.5V voltage Make the connection as shown in fig. 13 and make sure that the emitter voltage of Q401 is around +10.5V. ❶-2 Check of –10.5V voltage Make the connection as shown in fig. 13 and make sure that the emitter voltage of Q404 is around –10.5V.

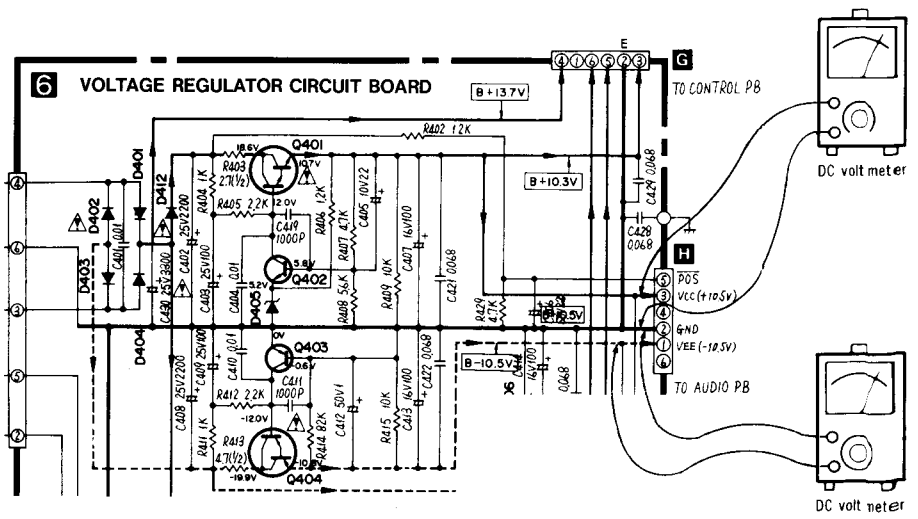


Fig. 13

ITEM	CHECKING METHOD

2 Check of control circuit in dbx circuit

Equipment:
* DC volt meter

E.C.B (G.S.D) voltage check of each switching transistor for Encode/Decode

The terminal voltage of each switching transistor in Encode/Decode mode are shown in the table below.

Transistor Ref. No.	Encode (dbx tape)			Decode (dbx tape)			disc		
	E (G)	C (S)	B (D)	E (G)	C (S)	B (D)	E (G)	C (S)	B (D)
Q15	−10.8V	6.0V	−10.8V	−10.8V	−10.8V	−10.1V	−10.8V	−10.8V	−10.1V
Q16	10.7V	−10.4V	10.6V	10.6V	10.7V	9.9V	−10.7V	−10.2V	−10.6V
Q17, 18	−8.8V	0V	0V	0.6V	0V	0V	0.6V	0V	0V
Q19, 20	0.6V	0V	0V	−8.8V	0V	0V	−8.8V	0V	0V
Q21	−10.8V	−10.8V	−10.1V	−10.8V	10.0V	−10.8V	−10.8V	−10.8V	−10.1V
Q30	0V	0V	0.6V	0V	10.7V	0V	0V	0V	0.6V
Q32	10.7V	10.7V	10.1V	10.7V	−10.7V	10.7V	10.7V	10.7V	10.1V
Q201, 202	−10.8V	0V	0V	+0.43V	0V	0V	−10.8V	0V	0V
Q205, 206	0V	−1.45V	−10.62V	−1.42V	−1.42V	−0.77V	−1.42V	−1.42V	−0.77V
Q207, 208	−1.45V	−1.45V	−0.83V	0V	−1.42V	−10.7V	0V	−1.42V	−10.71V
Q209, 210	0V	0V	0.61V	−0.15V	0V	−10.7V	0V	0V	−10.7V
Q211, 212	−0.11V	0V	−10.61V	0V	0V	0.63V	0V	0V	0.64V
Q213, 214	0V	−0.1V	−10.56V	0V	−0.1V	−10.56V	−0.29V	−0.29V	0.33V
Q215, 216	−0.1V	−0.1V	0.47V	0V	−0.1V	−10.65V	0V	−0.29V	−10.65V
Q217, 218	0V	0.01V	−10.62V	0V	0V	0.64V	0V	0V	0.64V
Q219, 220	0.01V	0V	0.62V	−1.42V	0V	−10.7V	−1.42V	0V	−10.71V
Q223, 224	−10.75V	−10.54V	−10.61V	−10.72V	10.64V	−10.62V	−10.77V	−10.76V	−10.12V

NOTE:
• If no abnormality is found in steps **1** and **2**, check the operation for each part as follows:

3 Operation check of INPUT BAND PASS FILTER circuit (27Hz−20kHz)

Condition:
* Record mode
* Input level controls ··· MAX
* Noise reduction selector ··· dbx tape

Equipment:
* VTVM
* AF oscillator
* ATT
* Oscilloscope
* Resistor (600Ω)

1. Make the connections as shown in fig. 14, and apply 100Hz −27dB signal from LINE IN, and set the noise reduction selector to dbx tape position.
2. Set the unit to record mode.
3. Adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300mV.
4. Make sure that the emitter signal level of Q203 (L-CH) and Q204 (R-CH) is 300mV.
5. Set the input signal frequency to 5kHz and make sure that the emitter signal of Q203 (L-CH) and Q204 (R-CH) remains at the same level (300mV).

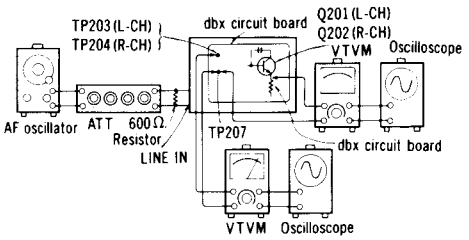


Fig. 14

4 Operation check of VCA circuit and Pre-emphasis/ De-emphasis circuit

Condition:
* Stop/record mode
* Input level controls ··· MAX
* Noise reduction selector ··· disc/dbx tape

Equipment:
* VTVM
* AF oscillator
* ATT
* Oscilloscope
* Resistor (600Ω)

4-1 Operation check of VCA circuit and Pre-emphasis circuit

1. Make the connections as shown in fig. 15, and apply 100Hz −27dB signal from LINE IN.
2. Short pin ③ of IC201 (L-CH) and IC202 (R-CH) to TP207 (ground) as shown in fig. 16.
3. Set the unit to record mode, and set the noise reduction selector to dbx tape position.
4. Adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300mV.
5. Make sure that the output signals at TP203 (L-CH) and TP204 (R-CH) are sinusoidal. (The operation of VCA can then be checked.)
6. Shift the frequency of input signal to 5kHz, and make sure that the output signal levels at TP203 (L-CH) and TP204 (R-CH) are increased by about 12dB. (The operation of the Pre-emphasis circuit can then be checked.)

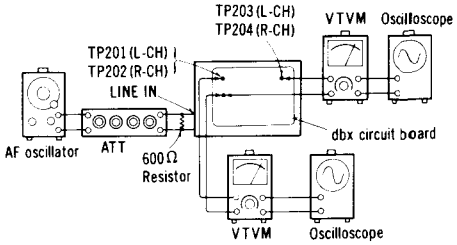


Fig. 15

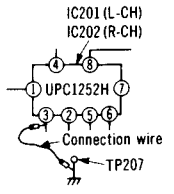
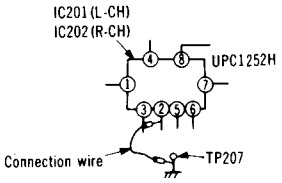
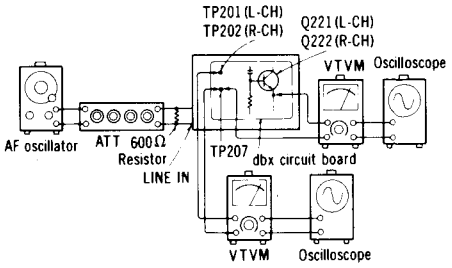
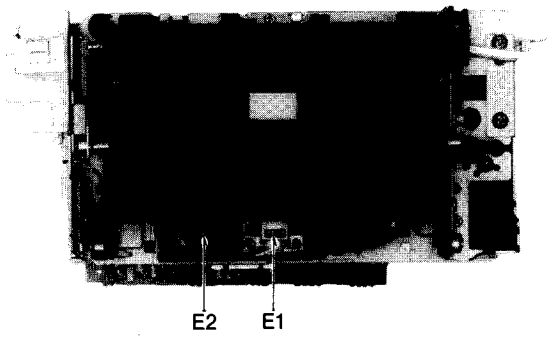
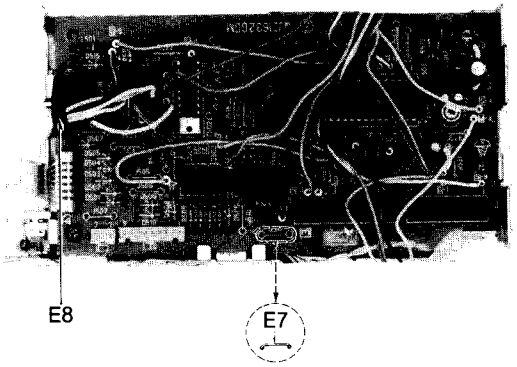


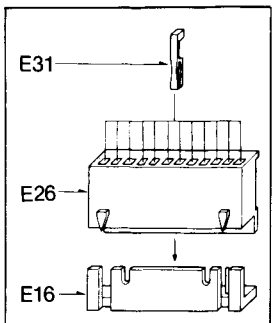
Fig. 16

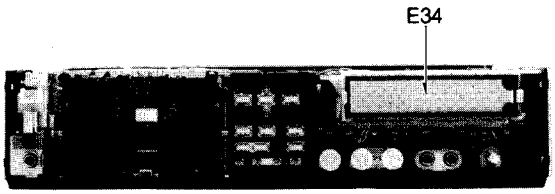
ITEM	CHECKING METHOD
	4-2 Operation check of VCA circuit and De-emphasis circuit 1. The procedure is the same as 1 for the above 4-1 VCA circuit and Pre-emphasis circuit. 2. Short pin ② of IC201 (L-CH) and IC202 (R-CH) to TP207 (ground) as shown in fig. 17. 3. Set the noise reduction selector to disc position. 4. Adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300 mV. 5. Make sure that the output signals at TP203 (L-CH) and TP204 (R-CH) are sinusoidal. (The operation of VCA can then be checked.) 6. Change the frequency of input signal to 5 kHz and make sure that the output signal level at TP203 (L-CH) and TP204 (R-CH) is decreased by about 12 dB. (The operation of the De-emphasis circuit can then be checked.)  **Fig. 17**
5 Operation check of RMS FILTER circuit (27 Hz—10 kHz) Condition: * Stop mode * Input level controls ··· MAX * Noise reduction selector ··· disc Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600 Ω)	1. Make the connections as shown in fig. 18, and apply 100 Hz −27 dB signal from LINE IN. 2. Set the noise reduction selector to disc position. 3. Adjust ATT so that the signal level at TP201 (L-CH) and TP202 (R-CH) is 300 mV. 4. Make sure that the emitter signal level of Q221 (L-CH) and Q222 (R-CH) is around 300 mV. 5. Change the frequency of input signal to 5 kHz and make sure that the emitter signal of Q221 (L-CH) and Q222 (R-CH) remains at the same level (300 mV).  **Fig. 18**

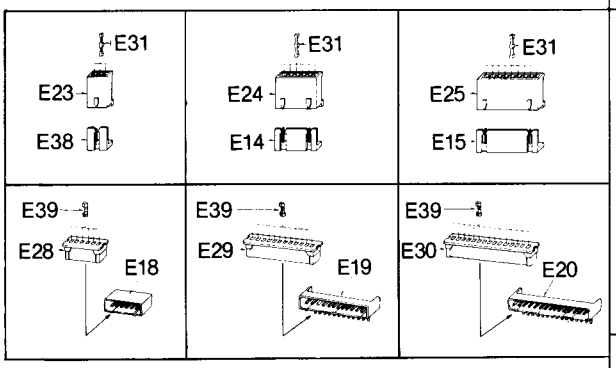
ELECTRICAL PARTS LOCATION

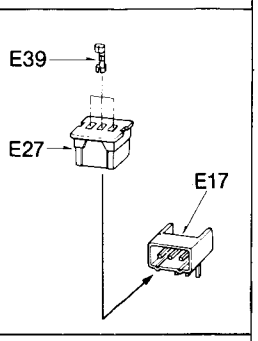


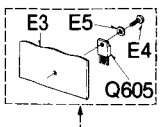


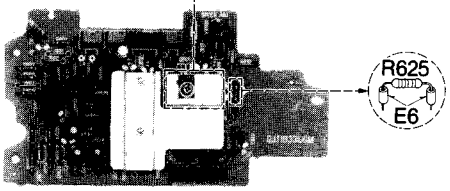


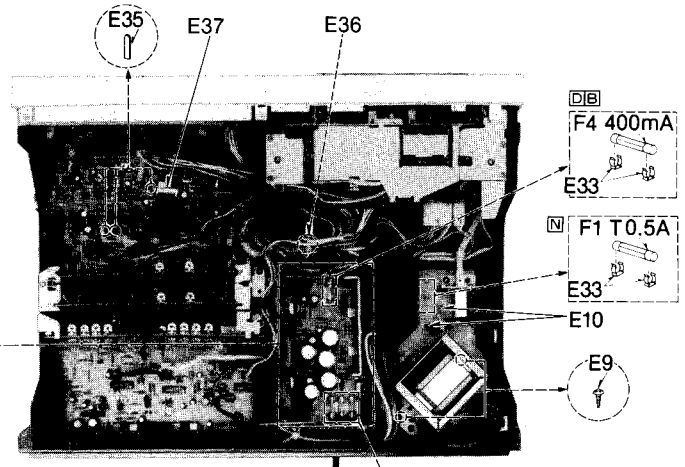


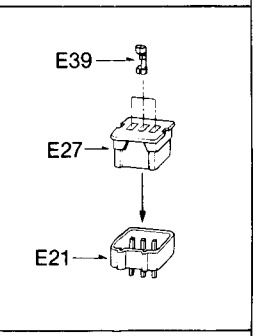


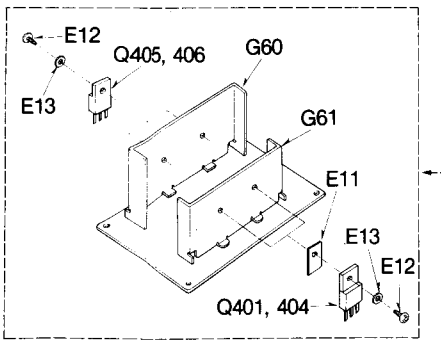


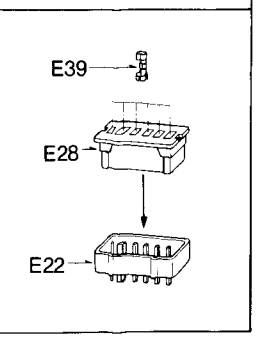












NOTES:

- [D] ..... For all European areas except United Kingdom.
- [B] ..... For United Kingdom.
- [N] ..... For Asia, Latin America, Middle East and Africa areas.

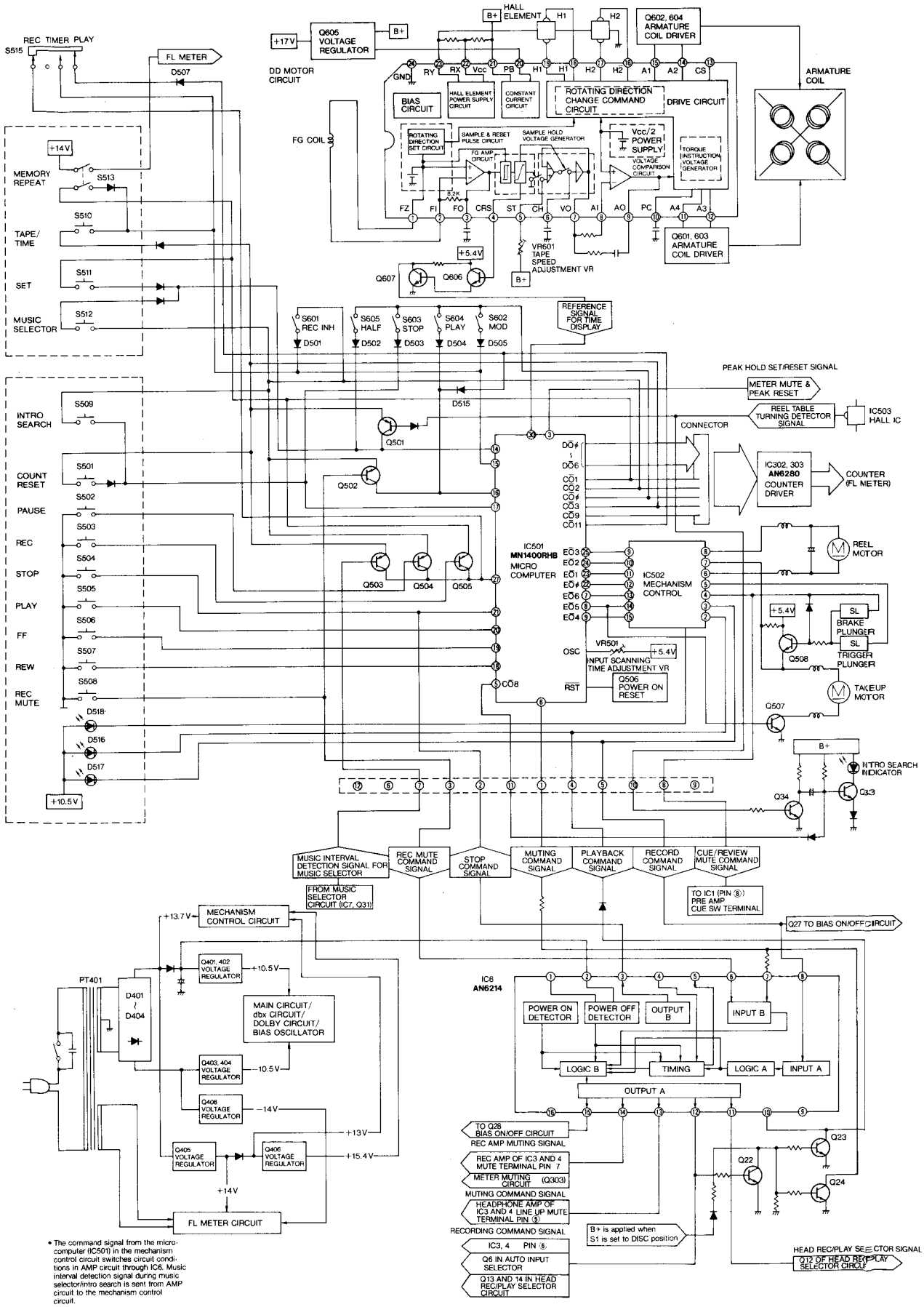
REPLACEMENT PARTS LIST

Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref No.	Part No.	Part Name & Description
		ELECTRICAL PARTS
E 1	QWY4137Z	Record/Playback Head
E 2	QWY2138Z	Erase Head
E 3	QTH1161	Heat Sink
E 4	XSN3+10S	Screw ⊕3×10
E 5	XWC3B	Snap Washer
E 6	QZE0003	Porcelain Tube
E 7	QJT1090	Pin Terminal
E 8	RME144Z	Cord Clamper
E 9	XTN3+8B	Tapping Screw ⊕3×8
E 10	SJT777	Pin Terminal
E 11	NO18E	Insulator Plate
E 12	XSN3+8S	Screw ⊕3×8
E 13	XWE3	Washer 3φ
E 14	QJP1922TN	6 Pin Post
E 15	QJP1923TN	9 Pin Post
E 16	QJP1924TN	12 Pin Post
E 17	QJPO3L001T	3Pin Post (L-Type)
E 18	QJP06L001T	6 Pin Post (L-Type)
E 19	QJP12L001T	12 Pin Post (L-Type)
E 20	QJP15L001T	15 Pin Post (L-Type)
E 21	QJP03S001T	3 Pin Post
E 22	QJP06S001T	6 Pin Post
E 23	QJS1921TN	3 Pin Socket
E 24	QJS1922TN	6 Pin Socket
E 25	QJS1923TN	9 Pin Socket
E 26	QJS1924TNL	12 Pin P.B Socket (L-type)
E 27	QJS03001T	3 Pin Socket
E 28	QJS06001T	6 Pin Socket
E 29	QJS1924TN	12 Pin P.B Socket
E 30	QJS15001T	15 Pin Socket
E 31	QJT1054	Contact
E 32		
	[D] ⚠ SJA88	AC Power Cord
	[For all European areas except United Kingdom.]	
	[B] ⚠ QFC1205M	AC Power Cord
	[For United Kingdom]	
	[N] ⚠ RJA52ZB	AC Power Cord
	[For Asia, Latin America, Middle East and Africa areas.]	
E 33		
	[DB] ⚠ QTF1054	Fuse Holder
	[For all European areas.]	
	[N] ⚠ QTF1060	Fuse Holder
	[For Asia, Latin America, Middle East and Africa areas.]	
E 34	QSiFM004F	FL Meter
E 35	QJT1067	Check Pin
E 36	QTD1181	Wire Clamper
E 37	QJS1961S	Jumper Socket
E 38	QJP1921TN	3 Pin Post
E 39	QJT1089	Contact

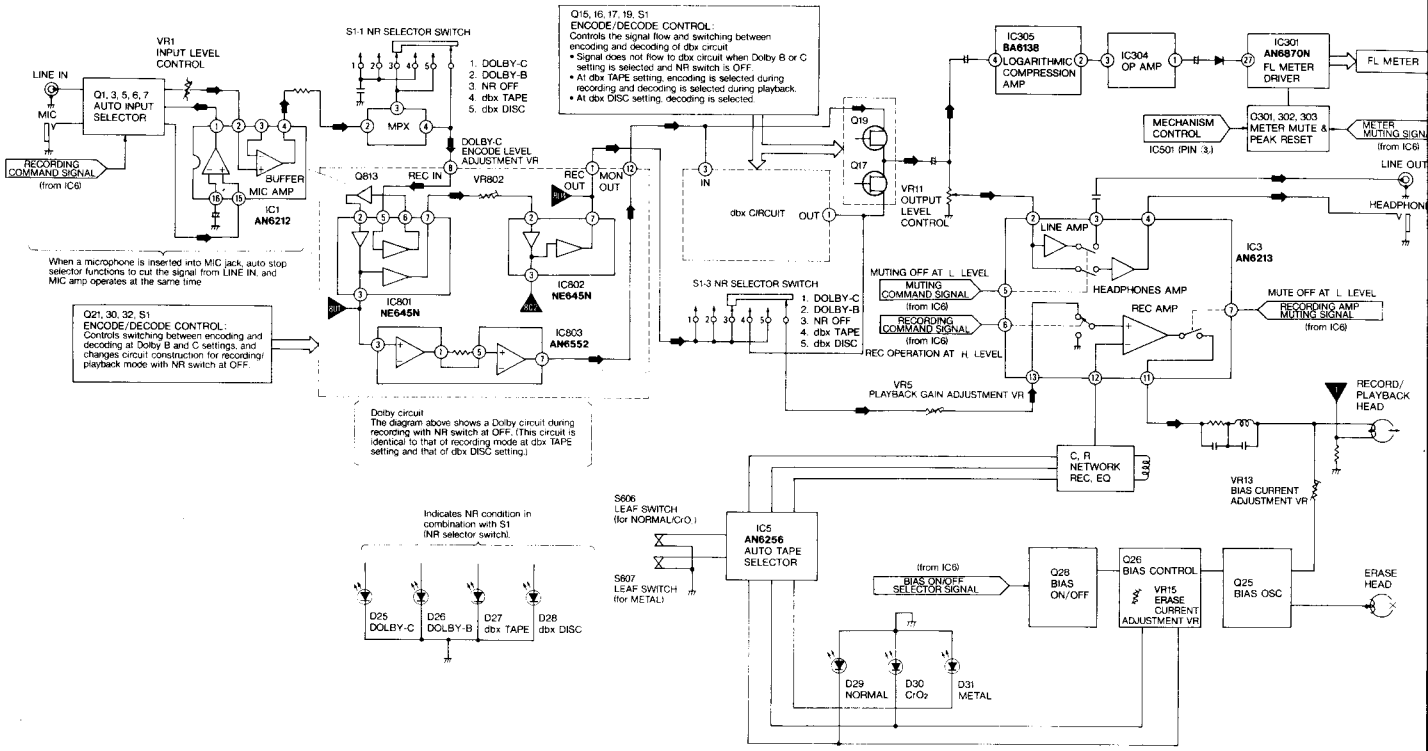
BLOCK DIAGRAM

MECHANISM CONTROL SECTION

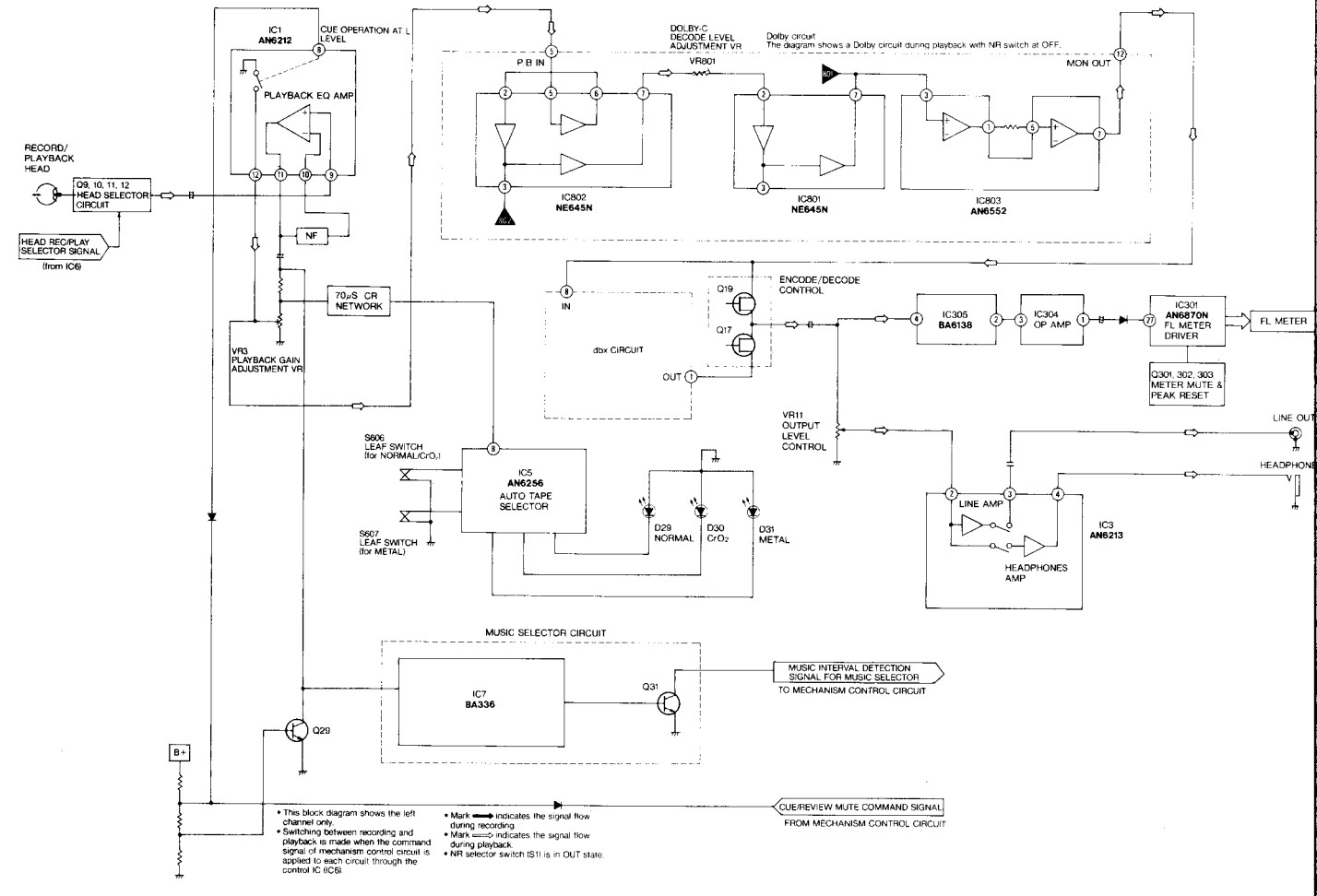


• The command signal from the micro-computer (IC501) in the mechanism control circuit switches circuit conditions in AMP circuit through IC6. Music interval detection signal during music selector/intro search is sent from AMP circuit to the mechanism control circuit.

RECORDING SYSTEM

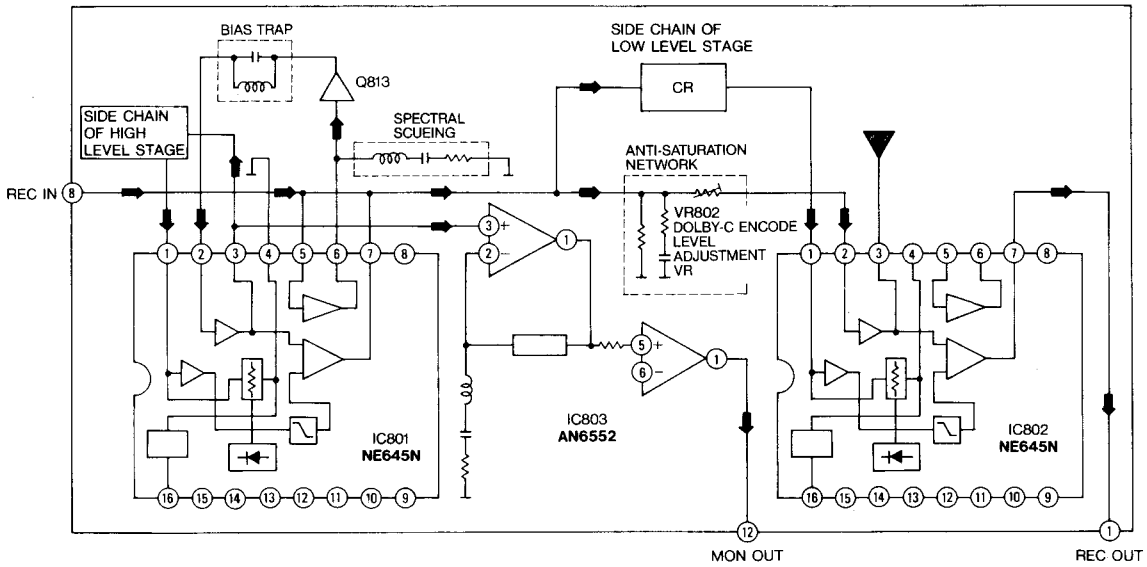

LINE IN
MIC
RECORDING COMMAND SIGNAL (from IC6)
Q1, 3, 5, 6, 7 AUTO INPUT SELECTOR
VR1 INPUT LEVEL CONTROL
BUFFER
MIC AMP
IC1 AN6212
When a microphone is inserted into MIC jack, auto stop selector functions to cut the signal from LINE IN, and MIC amp operates at the same time
S1-1 NR SELECTOR SWITCH
1. DOLBY-C
2. DOLBY-B
3. NR OFF
4. dbx TAPE
5. dbx DISC
MPX
DOLBY-C ENCODE LEVEL ADJUSTMENT VR
Q15, 16, 17, 19, S1 ENCODE/DECODE CONTROL: Controls the signal flow and switching between encoding and decoding of dbx circuit
• Signal does not flow to dbx circuit when Dolby B or C setting is selected and NR switch is OFF.
• At dbx TAPE setting, encoding is selected during recording and decoding is selected during playback.
• At dbx DISC setting, decoding is selected.
Q813
REC IN
VR802
REC OUT
MON OUT
IC801 NE645N
IC802 NE645N
IC803 AN6552
Q21, 30, 32, S1 ENCODE/DECODE CONTROL: Controls switching between encoding and decoding at Dolby B and C settings, and changes circuit construction for recording/playback mode with NR switch at OFF.
Dolby circuit
The diagram above shows a Dolby circuit during recording with NR switch at OFF. (This circuit is identical to that of recording mode at dbx TAPE setting and that of dbx DISC setting.)
IN
dbx CIRCUIT
OUT
Q19
Q17
VR11 OUTPUT LEVEL CONTROL
IC305 BA6138 LOGARITHMIC COMPRESSION AMP
IC304 OP AMP
IC301 AN6870N FL METER DRIVER
FL METER
MECHANISM CONTROL
IC501 (PIN 3)
Q301, 302, 303 METER MUTE & PEAK RESET
METER MUTING SIGNAL (from IC6)
LINE OUT
HEADPHONE
LINE AMP
IC3 AN6213
HEADPHONES AMP
MUTING OFF AT L LEVEL
MUTING COMMAND SIGNAL (from IC6)
REC AMP
RECORDING COMMAND SIGNAL (from IC6)
MUTE OFF AT L LEVEL
RECORDING AMP MUTING SIGNAL (from IC6)
S1-3 NR SELECTOR SWITCH
1. DOLBY-C
2. DOLBY-B
3. NR OFF
4. dbx TAPE
5. dbx DISC
REC OPERATION AT H LEVEL
VR5 PLAYBACK GAIN ADJUSTMENT VR
RECORD/ PLAYBACK HEAD
C, R NETWORK REC. EQ
VR13 BIAS CURRENT ADJUSTMENT VR
Indicates NR condition in combination with S1 (NR selector switch).
D25 DOLBY-C
D26 DOLBY-B
D27 dbx TAPE
D28 dbx DISC
S606 LEAF SWITCH (for NORMAL/CrO2)
S607 LEAF SWITCH (for METAL)
IC5 AN6256 AUTO TAPE SELECTOR
(from IC6) BIAS ON/OFF SELECTOR SIGNAL
Q28 BIAS ON/OFF
Q26 BIAS CONTROL
VR15 ERASE CURRENT ADJUSTMENT VR
Q25 BIAS OSC
ERASE HEAD
D29 NORMAL
D30 CrO2
D31 METAL

PLAYBACK SYSTEM

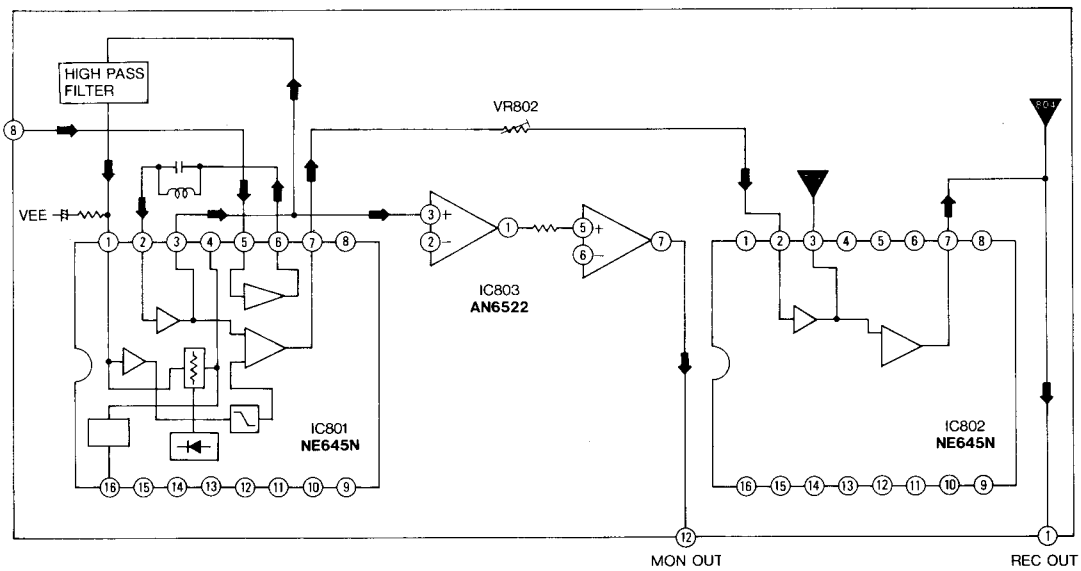


• DOLBY CIRCUIT

DOLBY-C ENCODE MODE (RECORD MODE)

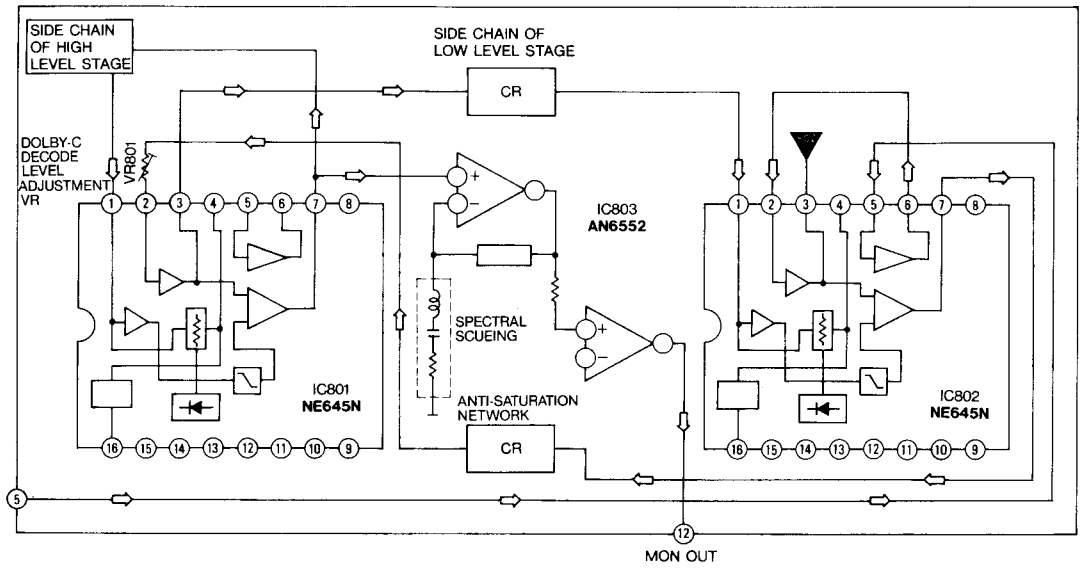


DOLBY-B ENCODE MODE (RECORD MODE)

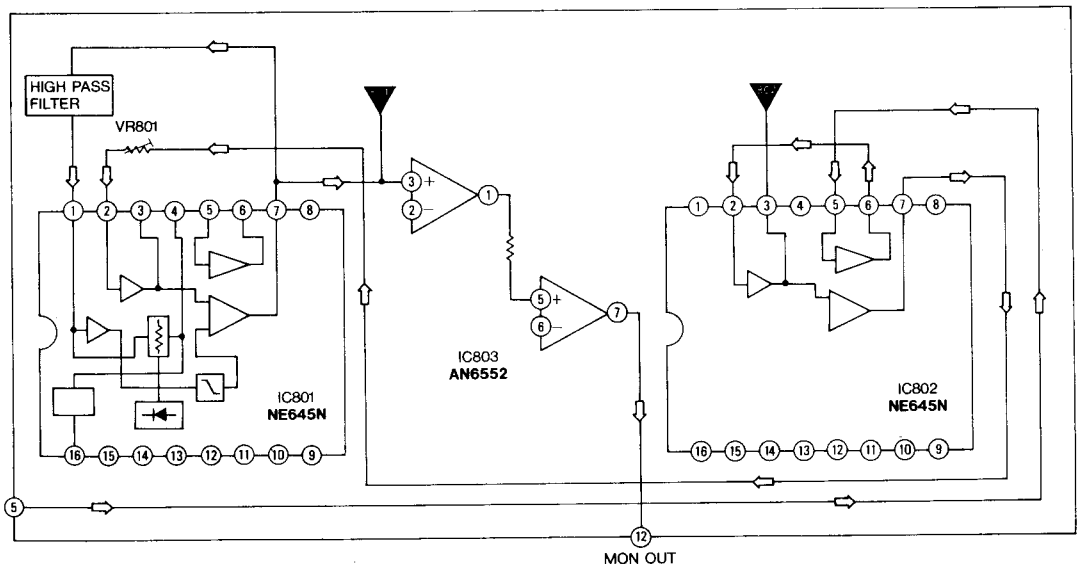


- This indicates the signal flow in the Dolby circuit during record/playback mode at Dolby C and Dolby B settings.
- Change in circuit construction is made by the switching transistors Q801-816 in the Dolby circuit according to the command signal from encode/decode control curcuit.

DOLBY-C DECODE MODE (PLAYBACK MODE)

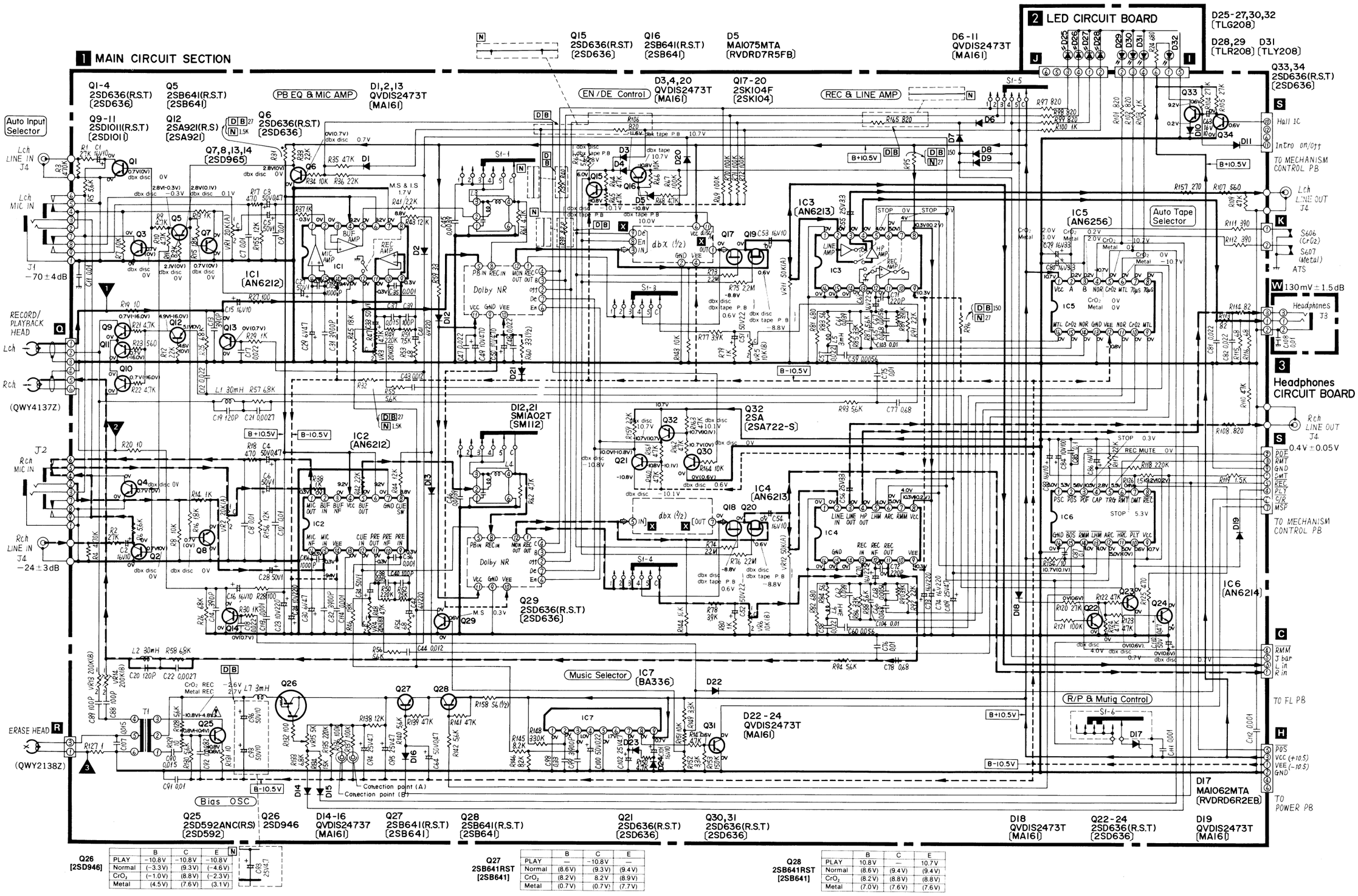


DOLBY-B ENCODE MODE (PLAYBACK MODE)



- Mark ⟶ indicates the signal flow during recording.
- Mark ⟹ indicates the signal flow during playback.

SCHEMATIC DIAGRAM



Q26 [2SD946]

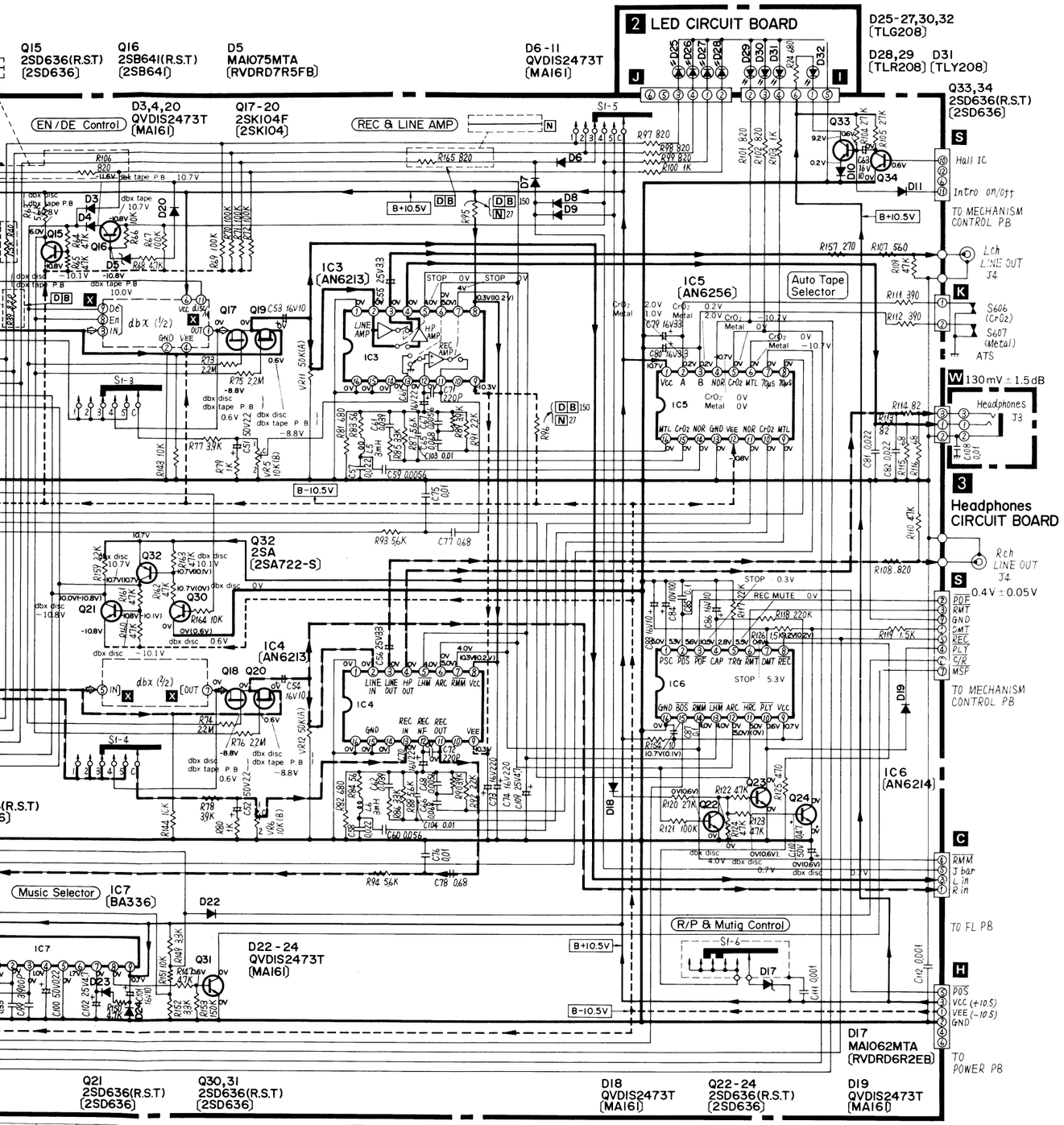
	B	C	E
PLAY	−10.8V	−10.8V	−10.8V
Normal	(−3.3V)	(9.3V)	(−4.6V)
CrO_2	(−1.0V)	(8.8V)	(−2.3V)
Metal	(4.5V)	(7.6V)	(3.1V)

Q27 2SB641RST [2SB641]

	B	C	E
PLAY	—	−10.8V	—
Normal	(8.6V)	(9.3V)	(9.4V)
CrO_2	(8.2V)	8.2V	(8.9V)
Metal	(0.7V)	(0.7V)	(7.7V)

Q28 2SB641RST [2SB641]

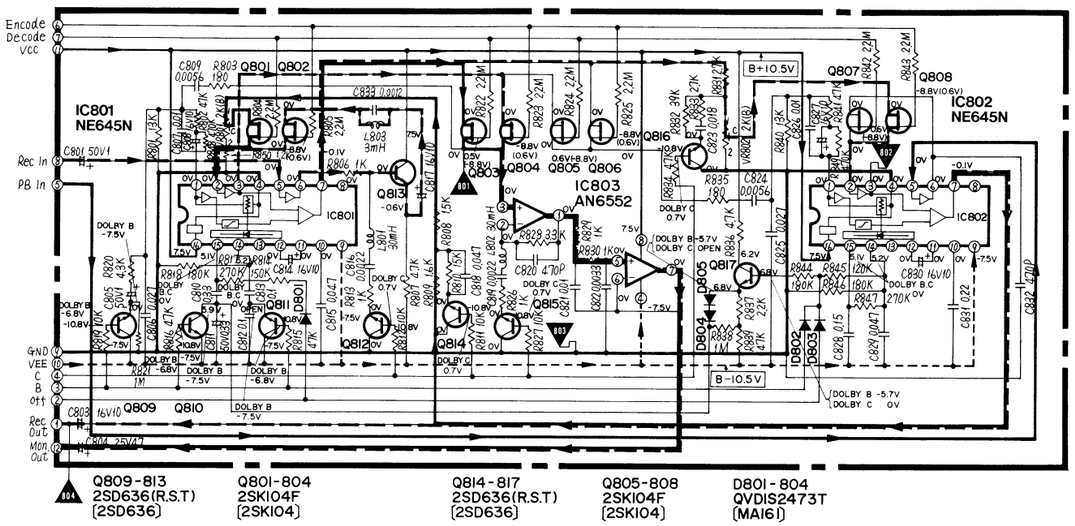
	B	C	E
PLAY	10.8V	—	10.7V
Normal	(8.6V)	(9.4V)	(9.4V)
CrO_2	(8.2V)	(8.8V)	(8.8V)
Metal	(7.0V)	(7.6V)	(7.6V)



	B	C	E
Q21	—	−10.8V	—
Q30	(8.6V)	(9.3V)	(9.4V)
Q31	(8.2V	8.2V	(8.9V)
Q32	(0.7V)	(0.7V)	(7.7V)

Q28 2SB641RST [2SB641]	B	C	E
PLAY	10.8V	—	10.7V
Normal	(8.6V)	(9.4V)	(9.4V)
CrO_2	(8.2V)	(8.8V)	(8.8V)
Metal	(7.0V)	(7.6V)	(7.6V)

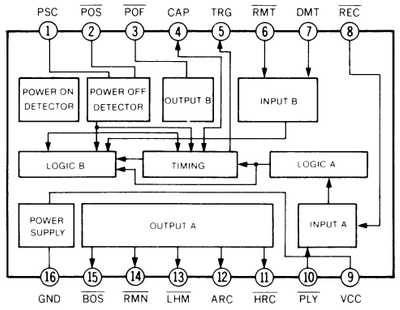
4 DOLBY CIRCUIT BOARD



EQUIVALENT CIRCUIT

IC7 BA336

IC6 AN6214



* Input level controls ··· MAX
* Output level control ··· MAX

SPECIFICATIONS

Playback S/N ratio * Test tape ··· QZZCFM	Greater than 45 dB
Overall distortion * Test tape ··· QZZCRA for Normal ··· QZZCRX for CrO_2 ··· QZZCRZ for Metal	Less than 3%
Overall S/N ratio * Test tape ··· QZZCRA	Greater than 43 dB (without NAB filter)

IC5 AN6256 (AUTO TAPE SELECTOR)

NOTES:

- [D] ..... For all European areas except United Kingdom.
- [B] ..... For United Kingdom.
- [N] ..... For Asia, Latin America, Middle East and Africa areas.

NOTES:

- S1-1–S1-6 ..... NR select switch (shown in out position) (1 Dolby-C, 2 Dolby-B, 3 NR OUT, 4 dbx Tape, 5 dbx disc)
- S606 ..... Auto tape select switch (For CrO_2/Normal tape)
- S607 ..... Auto tape select switch (For Metal tape)
- VR1, 2 ..... Input level control
- VR3, 4 ..... Playback gain adjustment VR
- VR5, 6 ..... Recording gain adjustment VR
- VR11, 12 ..... Output level control
- VR13, 14 ..... Bias current adjustment VR
- VR15 ..... Bias adjust volume
- VR801 ..... Playback level adjustment VR (Dolby)
- VR802 ..... Recording gain adjustment VR (Dolby)
- Connection point (A), (A')...Bias current adjustment point.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. 1K = 1,000 (Ω), 1M = 1,000 k(Ω).
- Capacity are in micro-farads (μF) unless specified otherwise.
- The mark (▼) shows test point. e.g. ▼ = Test point 1.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  - No mark ..... Voltage values at OUT (NR select switch) mode.
  - ( ) ..... Voltage values at record mode
  - dbx disc ..... Voltage values at dbx disc mode
  - dbx tape ..... Voltage values at dbx tape mode
  - dbx tape PB ..... Voltage values at dbx tape and playback mode
  - dbx tape REC ..... Voltage values at dbx tape and record mode
  - CrO_2 ..... Voltage values at CrO_2 tape mode
  - Metal ..... Voltage values at Metal tape mode
  - CrO_2 REC ..... Voltage values at CrO_2 tape and record mode
  - Metal REC ..... Voltage values at Metal tape and record mode
  - STOP ..... Voltage values at STOP mode
  - REC MUTE ..... Voltage values at REC MUTE mode
  - DOLBY B ..... Voltage values at Dolby-B mode
  - DOLBY C ..... Voltage values at Dolby-C mode
  - DOLBY B-C ..... Voltage values at Dolby-B or Dolby-C mode

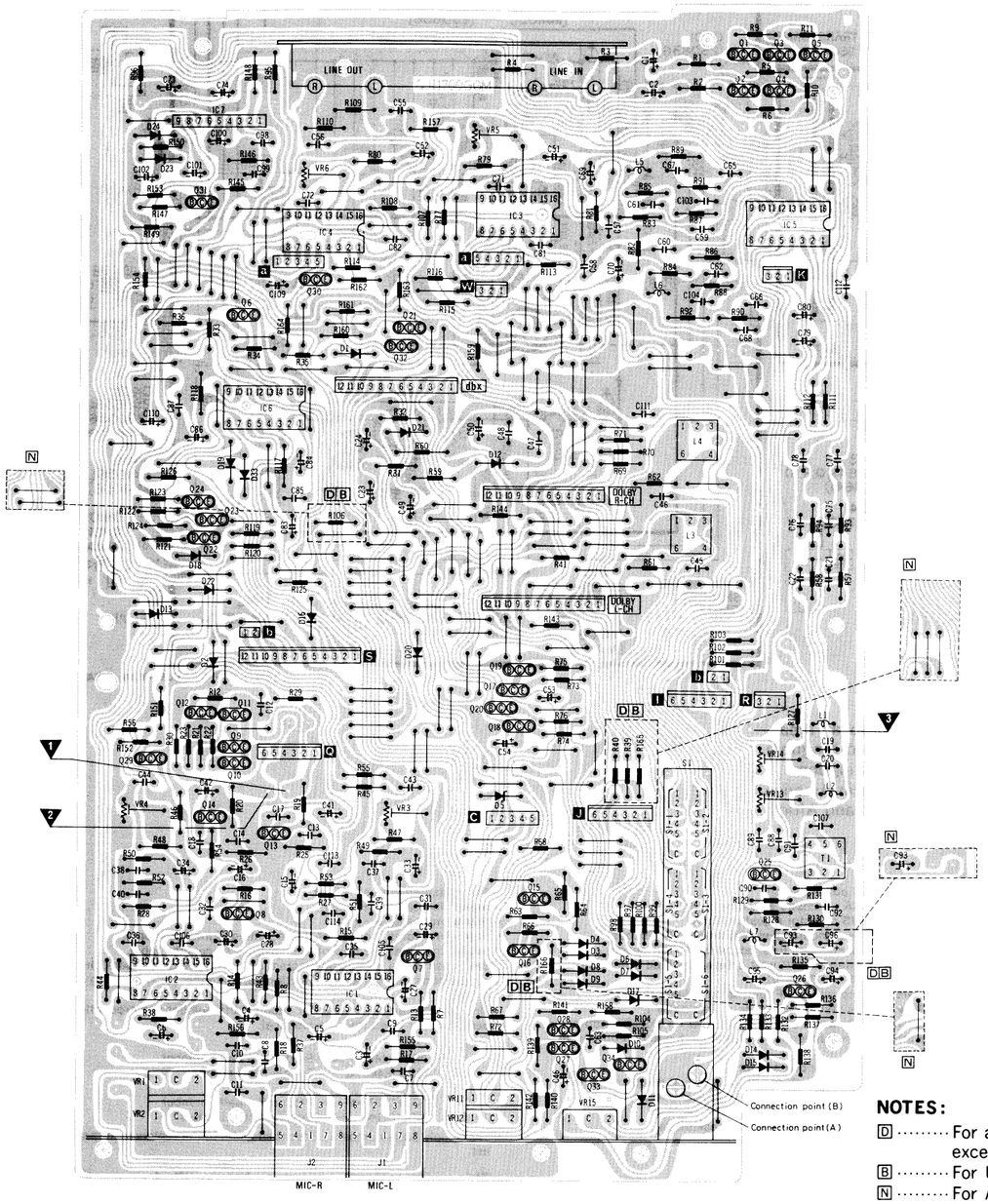
  For measurement use VTVM.
- (▬) indicates B + (bias).
- (■▬■) indicates B − (bias).
- (▬) indicates the flow of the playback signal.
- (■▬■) indicates the flow of the recording signal.
- Described in the schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes.
  One type of number is used for supply parts number and production parts number when they are identical.

  e.g. Q1
  2SC1844(E, F) ← Production parts number
  [2SC1844E] ← Supply parts number
  D212
  1S2473T77 ← Production parts number
  [MA161] ← Supply parts numbers
- The supply parts number is described alone in the replacement parts list.

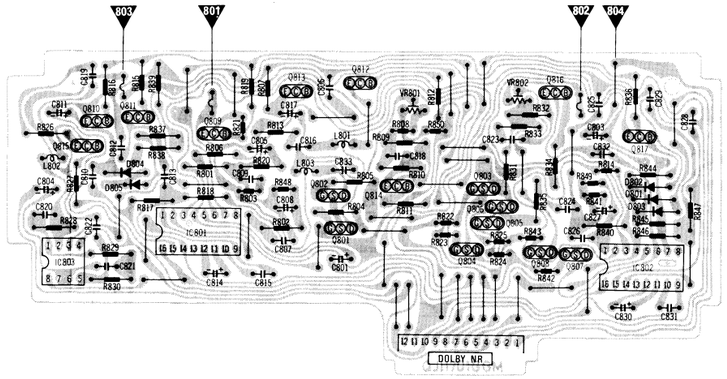
•This schematic diagram may be modified at any time with the development of new technology.

CIRCUIT BOARDS DIAGRAM

1 MAIN CIRCUIT BOARD



4 DOLBY CIRCUIT BOARD



IC1, 2 [AN6212]

1	−0.3V
2	0V
3	0V
4	9.2V
5	0V
6	9.2V
7	0V
8	8.8V
9	−0.3V
10	−0.3V
11	0V
12	0V
13	0V
14	−9.4V
15	−0.3V
16	−0.3V

IC3 [AN6213]

1	0V
2	0V
3	0V
4	0V
5	4V STOP 0V
6	0V (5.0V)
7	4V STOP 0V
8	10.3V (10.2V)
9	−10.3V
10	0V
11	0V
12	0V
13	0V
14	0V
15	0V
16	0V

IC4 [AN6213]

1	0V
2	0V
3	0V
4	0V
5	4.0V
6	0V (5.0V)
7	4.0V
8	10.3V (10.2V)
9	−10.3V
10	0V
11	0V
12	0V
13	0V
14	0V
15	0V
16	0V

IC5 [AN6256]

1	10.7V		
2	0.2V	CrO_2 Metal	2.0V 1.0V
3	0.2V	CrO_2 Metal	0.2V 2.0V
4	−10.7V	CrO_2 Metal	0V −10.7V
5	0V	CrO_2 Metal	−10.7V 0V
6	0V	CrO_2 Metal	0V −10.7V
7	0V		
8	0V		
9	0V		
10	0V		
11	0V		
12	−10.8V		
13	0V		
14	0V		
15	0V		
16	0V		

IC6 [AN6214]

1	5.0V	
2	5.3V	
3	5.6V	
4	10.5V	STOP 0.3V
5	2.8V	
6	5.5V	REC MUTE ON 0V
7	0.4V	STOP 5.3V
8	9.2V (0.2V)	
9	10.7V	
10	0.6V	STOP 1.8V
11	5.0V (0V)	
12	0V (5.0V)	
13	4.0V	STOP 0V
14	4.0V	REC MUTE ON 0V
15	10.7V (0.1V)	
16	0V	

IC7 [BA336]

1	0V
2	0V
3	0V
4	1.0V
5	0V
6	1.7V
7	0V
8	0V
9	10.7V

Q1, 2, 3, 4 2SD636RST [2SD636]

B	0.7V (0V)	dbx disc 0V
C	0V	
E	0V	

Q5 2SB641RST [2SB641]

B	2.1V (0V)	dbx disc 0V
C	2.8V (−0.3V)	dbx disc −0.3V
E	2.8V (0.1V)	dbx disc 0.1V

Q6 2SD636RST [2SD636]

B	0V (0.7V)	dbx disc 0.7V
C	2.8V (0V)	dbx disc 0V
E	0V	

Q7, 8 [2SD965]

B	0.7V (0V)	dbx disc 0V
C	0V	
E	0V	

Q9, 10, 11 2SD1011RST [2SD1011]

B	0.7V	(−16.0V)
C	0V	
E	0V	

Q12 2SA921RS [2SA921]

B	4.6V	(0V)
C	4.9V	(−16.0V)
E	5.1V	(0V)

Q13, 14 [2SD965]

B	0V	(0.7V)
C	0V	
E	0V	

Q15 2SD636RST [2SD636]

B	−10.8V	dbx disc	−10.1V
C	6.0V	dbx disc dbx tape P.B	−10.8V
E	−10.8V		

Q16 2SB641RST [2SB641]

B	−10.8V	dbx tape P.B 10.0V
C	−11.6V	dbx tape P.B 10.7V
E	−10.8V	dbx tape P.B 10.7V

Q17, 18 2SK104F [2SK104]

G	−8.8V	dbx disc dbx tape P.B	0.6V
S	0V		
D	0V		

Q19, 20 2SK104F [2SK104]

G	0.6V	dbx disc dbx tape P.B	−8.8V
S	0V		
D	0V		

Q21 2SD636RST [2SD636]

B	−10.8V	(−10.1V)	dbx disc −10.1V
C	10.0V	(−10.8V)	dbx disc −10.8V
E	−10.8V	(−10.8V)	

Q23 2SD636RST [2SD636]

B	0V (0.6V)	dbx disc 0.7V
C	0V	
E	0V	

Q24 2SD636RST [2SD636]

B	0V (0.6V)	dbx disc 0.7V
C	0V	
E	0V	

Q25 2SD592ANCRS [2SD592]

B	−10.8V	(−10.4V)	
C	−10.8V	(−4.8V)	CrO_2 (−2.6V) Metal (2.7V)
E	−10.8V	(−10.6V)	

Q26 [2SD946]

	B	C	E
PLAY	−10.8V	−10.8V	−10.8V
Normal	(−3.3V)	(9.3V)	(−4.6V)
CrO_2	(−1.0V)	(8.8V)	(−2.3V)
Metal	(4.5V)	(7.6V)	(3.1V)

Q27 2SB641RST [2SB641]

	B	C	E
PLAY	—	−10.8V	—
Normal	(8.6V)	(9.3V)	(9.4V)
CrO_2	(8.2V)	(8.8V)	(8.9V)
Metal	(7.0V)	(7.6V)	(7.7V)

Q28 2SB641RST [2SB641]

	B	C	E
PLAY	10.8V	—	10.7V
Normal	(8.6V)	(9.4V)	(9.4V)
CrO_2	(8.2V)	(8.8V)	(8.8V)
Metal	(7.0V)	(7.6V)	(7.6V)

Q29 2SD636RST [2SD636]

B	0.6V	
C	0V	
E	0V	

Q30 [2SA722-S]

B	0V (0.6V)	dbx disc 0.6V
C	10.7V (0V)	dbx disc 0V
E	0V	

Q31 2SD636RST [2SD636]

B	0V	
C	0V	
E	0.6V	

Q32 2SB641RST [2SB641]

B	10.7V	(10.1V)	dbx disc 10.1V
C	10.7V	(10.7V)	dbx disc 10.7V
E	10.7V		

Q33 2SD636RST [2SD636]

B	0.6V	
C	9.2V	
E	0.2V	

Q34 2SD636RST [2SD636]

B	0.6V	
C	0V	
E	0V	

IC801, 802 [NE645N]

1	0V
2	0V
3	0V
4	0V
5	0V
6	0V
7	−0.1V
8	0V
9	−7.5V
10	0V
11	0V
12	0V
13	0V
14	5.2V DOLBY B, C 0V
15	5.1V DOLBY B, C 0V
16	7.5V

IC803 [AN6552]

1	0V
2	0V
3	0V
4	7.5V
5	0V
6	0V
7	0V
8	7.5V

Q801 2SK104F [2SK104]

G	0.6V (−8.8V)
S	0V
D	0V

Q802 2SK104F [2SK104]

G	−8.8V (0.6V)
S	0V
D	0V

Q803 2SK104F [2SK104]

G	0.5V (−8.8V)
S	0V
D	0V

Q804 2SK104F [2SK104]

G	−8.8V (0.6V)
S	0V
D	0V

Q805, 807 2SK104F [2SK104]

G	0.6V (−8.8V)
S	0V
D	0V

Q806, 808 2SK104F [2SK104]

G	−8.8V (0.6V)
S	0V
D	0V

Q809 2SD636RST [2SD636]

B	−10.8V	DOLBY B	−6.8V
C	−7.5V		
E	−7.0V	DOLBY B	−7.5V

Q810 2SD636RST [2SD636]

B	−10.8V	DOLBY B	−6.8V
C	5.9V	DOLBY B	−7.5V
E	−7.5V		

Q811 2SD636RST [2SD636]

B	−10.8V	DOLBY B	−6.8V
C	−7.5V		
E	—	DOLBY B	−7.5V

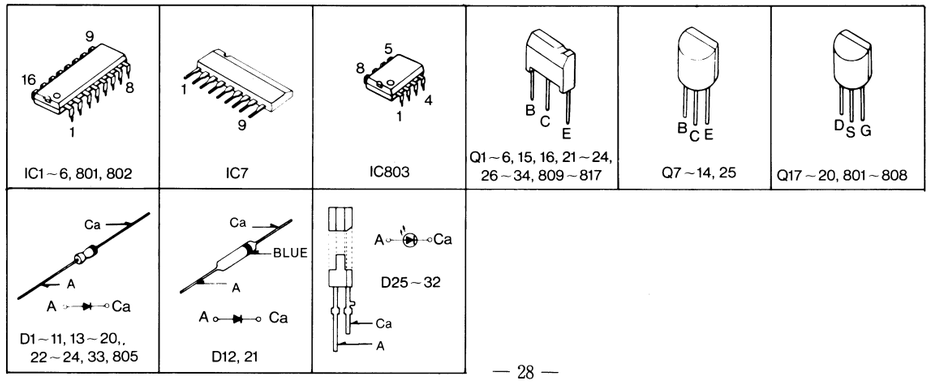
Q812, 814, 815, 816 2SD636RST [2SD636]

B	−10.8V	DOLBY C	0.7V
C	0V		
E	0V		

Q817 2SD636RST [2SD636]

B	6.8V	DOLBY B DOLBY C	−5.7V 0V
C	6.2V		
E	6.8V	DOLBY B DOLBY C	−5.7V 0V

TERMINATIONS



NOTES:

- The circuit shown in [ ] on the conductor side indicates printed circuit on the back side of the printed circuit board.
- Values indicated in [ ] are under no signal condition and playback mode with volume control at minimum position otherwise specified.

No mark ..... Voltage values at OUT (NR select switch) mode
( ) ..... Voltage values at record mode
dbx disc ..... Voltage values at dbx disc mode
dbx tape ..... Voltage values at dbx tape mode
dbx tape PB ..... Voltage values at dbx tape and playback mode
dbx tape REC ..... Voltage values at dbx tape and record mode
CrO_2 ..... Voltage values at CrO_2 tape mode
Metal ..... Voltage values at Metal tape mode
CrO_2 REC ..... Voltage values at CrO_2 tape and record mode
Metal REC ..... Voltage values at Metal tape and record mode
STOP ..... Voltage values at STOP mode
REC MUTE ..... Voltage values at REC MUTE mode
DOLBY B ..... Voltage values at Dolby-B mode
DOLBY C ..... Voltage values at Dolby-C mode
DOLBY B-C ..... Voltage values at Dolby-B or Dolby-C mode
MS.IS ..... Voltage values at Intro Search mode
For measurement use VTVM.

• This schematic diagram may be modified at any time with the development of new technology.

NOTES:

- D ..... For all European areas except United Kingdom.
- B ..... For United Kingdom.
- N ..... For Asia, Latin America, Middle East and Africa areas.

NOTES: RESISTORS
ERD.....Carbon
ERG .....Metal-oxide
ERS.....Metal-oxide
ERO .....Metal-film
ERX.....Metal-film
ERQ .....Fuse type metall
ERC.....Solid
ERF.....Cement

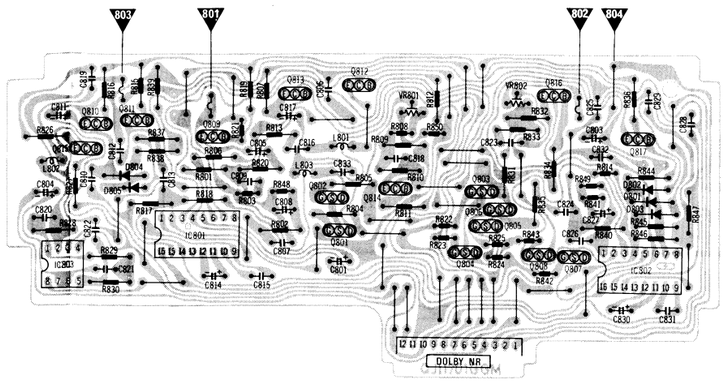
REPLACEMENT PARTS LIST

Important safety notice
Components identified by ⚠ mark hav
characteristics important for safety.
When replacing any of these compon
only manufacturer's specified parts.

Ref No.	Part No.
RESISTORS	
R 1, 2	ERD25TJ273
R 3, 4	ERD25TJ474
R 5, 6	ERD25FJ562
R 7, 8	ERD25FJ103
R 9, 10	ERD25FJ472
R 11	ERD25FJ822
R 12	ERD25TJ223
R 13, 14	ERD25FJ102
R 15, 16	ERD25FJ182
R 17, 18	ERD25FJ471
R 19, 20	ERD25FJ100
R 21, 22	ERD25FJ472
R 23	ERD25FJ561
R 24	ERD25FJ681
R 25, 26	ERD25TJ683
R 27, 28	ERD25FJ101
R 29, 30	ERD25FJ102
R 31 [DB]	ERQ14AJ270
[For all European areas.]	
[N]	ERD25FJ152
[For Asia, Latin America, Middle East and Africa areas.]	
R 32 [DB]	ERQ14AJ270
[For all European areas.]	
[N]	ERD25FJ152
[For Asia, Latin America, Middle East and Africa areas.]	
R 33	ERD25FJ222
R 34	ERD25FJ103
R 35	ERD25TJ473
R 36	ERD25TJ223
R 37	ERD25FJ102
R 38	ERD25FJ102
R 39 [DB]	ERD25FJ821
[For all European areas.]	
R 40 [DB]	ERD25FJ152
[For all European areas.]	
R 41, 42	ERD25FJ222
R 43, 44	ERD25TJ123
R 45, 46	ERD25TJ183
R 47, 48	ERD25FJ472
R 49, 50	ERD25TJ224
R 51, 52	ERD25FJ752
R 53, 54	ERD25FJ680
R 55, 56	ERD25FJ562
R 57, 58	ERD25FJ682
R 59 [DB]	ERQ14AJ330
[For all European areas.]	
[N]	ERD25FJ330
[For Asia, Lain America, Middle East and Africa areas.)	
R 60	ERQ14AJ330
R 61, 62	ERD25FJ472
R 63	ERD25FJ562
R 64, 65	ERD25TJ473
R 66	ERD25FJ103
R 67	ERD25TJ104
R 68	ERD25FJ472
R 69, 70, 71, 72	ERD25TJ104
R 73, 74, 75, 76	ERD25TJ225
R 77, 78	ERD25FJ392
R 79, 80	ERD25FJ102
R 81, 82	ERD25FJ681
R 83, 84	ERD25TJ560
R 85, 86	ERD25FJ332
R 87, 88	ERD25FJ562
R 89, 90	ERD25FJ392
R 91, 92	ERD25FJ222
R 93, 94	ERD25FJ562
R 95 [DB]	ERQ14AJ151
For all European areas.]	
[N]	ERD25FJ270
[For Asia, Latin America, Middle East and Africa areas.]	
R 96 [D	
[For	
[For Midd areas	
R 97, 98	
R 100	
R 101,	
R 103	
R 104,	
R 106 [D	
[For	
R 107	
R 108	
R 109,	
R 111,	
R 113,	
R 115,	
R 117	
R 118	
R 119	
R 120	
R 121	
R 122,	
R 125	
R 126	
R 127	
R 128	
R 129	
R 130	
R 131	
R 132	
R 133	
R 134	
R 135	
R 136,	
R 138	
R 139	
R 140	
R 141	
R 142	
R 143,	
R 145,	
R 147	
R 148	
R 149	
R 150	
R 151	
R 152	
R 153	
R 154	
R 155,	
R 157	
R 158	
R 159	
R 160,	
R 164	
R 165,	
[D	
[For	
R 201, 2	
R 205, 2	
R 207, 2	
R 209, 2	
R 211, 2	
R 213, 2	
R 215, 2	
R 217, 2	
R 219, 2	
R 221, 2	
R 223, 2	
R 225, 2	
R 227,	

RS-M275X

4 DOLBY CIRCUIT BOARD



IC801, 802 [NE645N]

1	0V
2	0V
3	0V
4	0V
5	0V
6	0V
7	-0.1V
8	0V
9	-7.5V
10	0V
11	0V
12	0V
13	0V
14	5.2V DOLBY B. C 0V
15	5.1V DOLBY B. C 0V
16	7.5V

IC803 [AN6552]

1	0V
2	0V
3	0V
4	-7.5V
5	0V
6	0V
7	0V
8	7.5V

Q813 2SD636RST [2SD636]

B	0V
C	7.5V
E	-0.6V

Q801 2SK104F [2SK104]

G	0.6V (-8.8V)
S	0V
D	0V

Q802 2SK104F [2SK104]

G	-8.8V (0.6V)
S	0V
D	0V

Q803 2SK104F [2SK104]

G	0.5V (-8.8V)
S	0V
D	0V

Q804 2SK104F [2SK104]

G	-8.8V (0.6V)
S	0V
D	0V

Q805, 807 2SK104F [2SK104]

G	0.6V (-8.8V)
S	0V
D	0V

Q806, 808 2SK104F [2SK104]

G	-8.8V (0.6V)
S	0V
D	0V

IC1, 2 [AN6212]

1	-0.3V
2	0V
3	0V
4	9.2V
5	0V
6	9.2V
7	0V
8	8.8V
9	-0.3V
10	-0.3V
11	0V
12	0V
13	0V
14	-9.4V
15	-0.3V
16	-0.3V

IC3 [AN6213]

1	0V
2	0V
3	0V
4	0V
5	4V STOP 0V
6	0V (5.0V)
7	4V STOP 0V
8	10.3V (10.2V)
9	-10.3V
10	0V
11	0V
12	0V
13	0V
14	0V
15	0V
16	0V

IC4 [AN6213]

1	0V
2	0V
3	0V
4	0V
5	4.0V
6	0V (5.0V)
7	4.0V
8	10.3V (10.2V)
9	-10.3V
10	0V
11	0V
12	0V
13	0V
14	0V
15	0V
16	0V

Q1, 2, 3, 4 2SD636RST [2SD636]

B	0.7V (0V) dbx disc 0V
C	0V
E	0V

Q16 2SB641RST [2SB641]

B	-10.8V dbx tape P.B 10.0V
C	-11.6V dbx tape P.B 10.7V
E	-10.8V dbx tape P.B 10.7V

Q25 2SD592ANCRS [2SD592]

B	-10.8V (-10.4V)
C	-10.8V (-4.8V) CrO_2 (-2.6V) Metal (2.7V)
E	-10.8V (-10.6V)

Q26 [2SD946]

	B	C	E
PLAY	-10.8V	-10.8V	-10.8V
Normal	(-3.3V)	(9.3V)	(-4.6V)
CrO_2	(-1.0V)	(8.8V)	(-2.3V)
Metal	(4.5V)	(7.6V)	(3.1V)

Q5 2SB641RST [2SB641]

B	2.1V (0V) dbx disc 0V
C	2.8V (-0.3V) dbx disc -0.3V
E	2.8V (0.1V) dbx disc 0.1V

Q17, 18 2SK104F [2SK104]

G	-8.8V dbx disc dbx tape P.B 0.6V
S	0V
D	0V

Q27 2SB641RST [2SB641]

	B	C	E
PLAY	—	-10.8V	—
Normal	(8.6V)	(9.3V)	(9.4V)
CrO_2	(8.2V)	(8.8V)	(8.9V)
Metal	(7.0V)	(7.6V)	(7.7V)

Q809 2SD636RST [2SD636]

B	-10.8V DOLBY B -6.8V
C	-7.5V
E	-7.0V DOLBY B -7.5V

Q810 2SD636RST [2SD636]

B	-10.8V DOLBY B -6.8V
C	5.9V DOLBY B -7.5V
E	-7.5V

IC5 [AN6256]

1	10.7V		
2	0.2V	CrO_2 Metal	2.0V 1.0V
3	0.2V	CrO_2 Metal	0.2V 2.0V
4	-10.7V	CrO_2 Metal	0V 0V
5	0V	CrO_2 Metal	-10.7V 0V
6	0V	CrO_2 Metal	0V -10.7V
7	0V		
8	0V		
9	0V		
10	0V		
11	-10.8V		
13	0V		
14	0V		
15	0V		
16	0V		

IC6 [AN6214]

1	5.0V
2	5.3V
3	5.6V
4	10.5V STOP 0.3V
5	2.8V
6	5.5V REC MUTE ON 0V
7	0.4V STOP 5.3V
8	9.2V (0.2V)
9	10.7V
10	0.6V STOP 1.8V
11	5.0V (0V)
12	0V (5.0V)
13	4.0V STOP 0V
14	4.0V REC MUTE ON 0V
15	10.7V (0.1V)
16	0V

Q6 2SD636RST [2SD636]

B	0V (0.7V) dbx disc 0.7V
C	2.8V (0V) dbx disc 0V
E	0V

Q19, 20 2SK104F [2SK104]

G	0.6V dbx disc dbx tape P.B -8.8V
S	0V
D	0V

Q28 2SB641RST [2SB641]

	B	C	E
PLAY	10.8V	—	10.7V
Normal	(8.6V)	(9.4V)	(9.4V)
CrO_2	(8.2V)	(8.8V)	(8.8V)
Metal	(7.0V)	(7.6V)	(7.6V)

Q7, 8 [2SD965]

B	0.7V (0V) dbx disc 0V
C	0V
E	-0V

Q21 2SD636RST [2SD636]

B	-10.8V (-10.1V) dbx disc -10.1V
C	10.0V (-10.8V) dbx disc -10.8V
E	-10.8V (-10.8V)

Q29 2SD636RST [2SD636]

B	0.6V
C	0V
E	0V

Q30 [2SA722-S]

B	0V (0.6V) dbx disc 0.6V
C	10.7V (0V) dbx disc 0V
E	0V

Q9, 10, 11 2SD1011RST [2SD1011]

B	0.7V (-16.0V)
C	0V
E	0V

Q23 2SD636RST [2SD636]

B	0V (0.6V) dbx disc 0.7V
C	0V
E	0V

Q31 2SD636RST [2SD636]

B	0V
C	0V
E	0.6V

Q32 2SB641RST [2SB641]

B	10.7V (10.1V) dbx disc 10.1V
C	-10.7V (10.7V) dbx disc 10.7V
E	10.7V

Q812, 814, 815, 816 2SD636RST [2SD636]

B	-10.8V DOLBY C 0.7V
C	0V
E	0V

IC7 [BA336]

1	0V
2	0V
3	0V
4	1.0V
5	0V
6	1.7V
7	0V
8	0V
9	10.7V

Q22 2SD636RST [2SD636]

B	0V (0.6V)
C	0V dbx disc 4.0V
E	0V

Q12 2SA921RS [2SA921]

B	4.6V (0V)
C	4.9V (-16.0V)
E	5.1V (0V)

Q13, 14 [2SD965]

B	0V (0.7V)
C	0V
E	0V

Q15 2SD636RST [2SD636]

B	-10.8V dbx disc dbx tape P.B -10.1V
C	6.0V dbx disc dbx tape P.B -10.8V
E	-10.8V

Q24 2SD636RST [2SD636]

B	0V (0.6V) dbx disc 0.7V
C	0V
E	0V

Q33 2SD636RST [2SD636]

B	0.6V
C	9.2V
E	0.2V

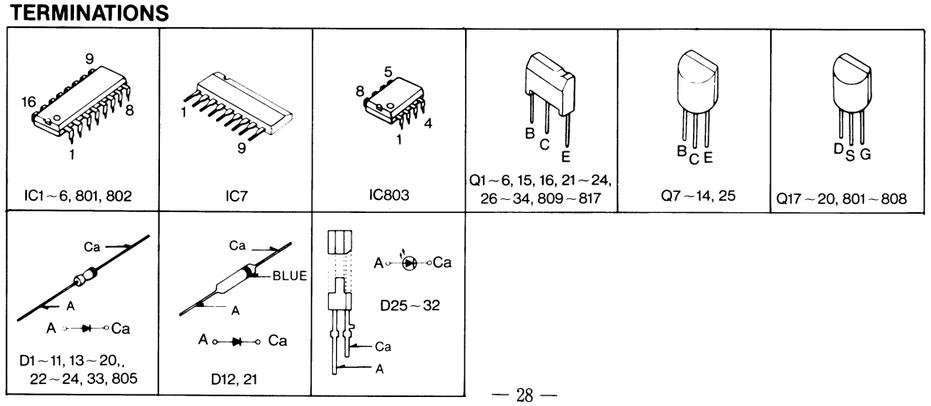
Q34 2SD636RST [2SD636]

B	0.6V
C	0V
E	0V

Q817 2SD636RST [2SD636]

B	6.8V DOLBY B -5.7V DOLBY C 0V
C	6.2V
E	6.8V DOLBY B -5.7V DOLBY C 0V

TERMINATIONS



S:
- ····For all European areas except United Kingdom.
- ····For United Kingdom.
- ····For Asia, Latin America, Middle East and Africa areas.

e

NOTES: RESISTORS
- ERD.....Carbon
- ERG .....Metal-oxide
- ERS.....Metal-oxide
- ERO .....Metal-film
- ERX.....Metal-film
- ERQ .....Fuse type metallic
- ERC.....Solid
- ERF.....Cement

CAPACITORS
- ECBA .....Ceramic
- ECG□ .....Ceramic
- ECK□ .....Ceramic
- ECC□ .....Ceramic
- ECF□ .....Ceramic
- ECQM.....Polyester film
- ECQE .....Polyester film
- ECQF .....Polypropylene
- ECE□ .....Electrolytic
- ECE□N ...Non polar electrolytic
- ECQS .....Polystyrene
- ECS□ .....Tantalum
- QCS .....Tantalum

REPLACEMENT PARTS LIST

Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

RESISTORS

Ref No.	Part No.
R 1, 2	ERD25TJ273
R 3, 4	ERD25TJ474
R 5, 6	ERD25FJ562
R 7, 8	ERD25FJ103
R 9, 10	ERD25FJ472
R 11	ERD25FJ822
R 12	ERD25TJ223
R 13, 14	ERD25FJ102
R 15, 16	ERD25FJ182
R 17, 18	ERD25FJ471
R 19, 20	ERD25FJ100
R 21, 22	ERD25FJ472
R 23	ERD25FJ561
R 24	ERD25FJ681
R 25, 26	ERD25TJ683
R 27, 28	ERD25FJ101
R 29, 30	ERD25FJ102
R 31 [DB]	ERQ14AJ270
[For all European areas.] [N]	ERD25FJ152
[For Asia, Latin America, Middle East and Africa areas.]	
R 32 [DB]	ERQ14AJ270
[For all European areas.] [N]	ERD25FJ152
[For Asia, Latin America, Middle East and Africa areas.]	
R 33	ERD25FJ222
R 34	ERD25FJ103
R 35	ERD25TJ473
R 36	ERD25TJ223
R 37	ERD25FJ102
R 38	ERD25FJ102
R 39 [DB]	ERD25FJ821
[For all European areas.]	
R 40 [DB]	ERD25FJ152
[For all European areas.]	
R 41, 42	ERD25FJ222
R 43, 44	ERD25TJ123
R 45, 46	ERD25TJ183
R 47, 48	ERD25FJ472
R 49, 50	ERD25TJ224
R 51, 52	ERD25FJ752
R 53, 54	ERD25FJ680
R 55, 56	ERD25FJ562
R 57, 58	ERD25FJ682
R 59 [DB]	ERQ14AJ330
[For all European areas.] [N]	ERD25FJ330
[For Asia, Lain America, Middle East and Africa areas.)	
R 60	ERQ14AJ330
R 61, 62	ERD25FJ472
R 63	ERD25FJ562
R 64, 65	ERD25TJ473
R 66	ERD25FJ103
R 67	ERD25TJ104
R 68	ERD25FJ472
R 69, 70, 71, 72	ERD25TJ104
R 73, 74, 75, 76	ERD25TJ225
R 77, 78	ERD25FJ392
R 79, 80	ERD25FJ102
R 81, 82	ERD25FJ681
R 83, 84	ERD25FJ560
R 85, 86	ERD25FJ332
R 87, 88	ERD25FJ562
R 89, 90	ERD25FJ392
R 91, 92	ERD25FJ222
R 93, 94	ERD25FJ562
R 95 [DB]	ERQ14AJ151
For all European areas.] [N]	ERD25FJ270
[For Asia, Latin America, Middle East and Africa areas.]	
R 96 [DB]	ERQ14AJ151
[For all European areas.] [N]	ERD25FJ270
[For Asia, Latin America, Middle East and Africa areas.]	
R 97, 98, 99	ERD25FJ821
R 100	ERD25FJ102
R 101, 102	ERD25FJ821
R 103	ERD25FJ102
R 104, 105	ERD25TJ273
R 106 [DB]	ERD25FJ821
[For all European areas.]	
R 107	ERD25FJ561
R 108	ERD25FJ821
R 109, 110	ERD25TJ473
R 111, 112	ERD25FJ391
R 113, 114	ERD25FJ820
R 115, 116	ERD25FJ680
R 117	ERD25TJ223
R 118	ERD25TJ224
R 119	ERD25FJ152
R 120	ERD25TJ273
R 121	ERD25TJ104
R 122, 123, 124	ERD25TJ473
R 125	ERD25FJ471
R 126	ERD25FJ152
R 127	ERD25FJ1R0
R 128	ERD25FJ562
R 129	ERD25FJ100
R 130	ERD25FJ562
R 131	ERD25FJ100
R 132	ERD25FJ101
R 133	ERD25FJ682
R 134	ERD25TJ153
R 135	ERD25TJ224
R 136, 137	ERD25TJ104
R 138	ERD25TJ123
R 139	ERD25TJ473
R 140	ERD25FJ562
R 141	ERD25TJ473
R 142	ERD25FJ562
R 143, 144	ERD25FJ103
R 145, 146	ERD25FJ822
R 147	ERD25TJ473
R 148	ERD25TJ334
R 149	ERD25FJ332
R 150	ERD25FJ472
R 151	ERD25FJ103
R 152	ERD25FJ332
R 153	ERD25TJ154
R 154	ERQ14AJ100
R 155, 156	ERD25TJ123
R 157	ERD25FJ271
R 158	ERD50FJ560
R 159	ERD25TJ223
R 160, 161, 162, 163	ERD25TJ473
R 164	ERD25FJ103
R 165, 166 [DB]	ERD25FJ821
[For all European areas.]	
R 201, 203	ERD25TJ104
R 205, 206	ERD25FJ101
R 207, 208	ERD25TJ474
R 209, 210	ERD25TJ105
R 211, 212	ERD25TJ124
R 213, 214	ERD25TJ473
R 215, 216	ERD25FJ472
R 217, 218	ERD25TJ473
R 219, 220	ERD25TJ333
R 221, 222	ERD25FJ103
R 223, 224	ERD25TJ473
R 225, 226	ERD25FJ470
R 227, 228	ERD25TJ124
R 229, 230	ERD25FJ332
R 231, 232	ERD25TJ473
R 233, 234, 235, 236	ERD25TJ104
R 237, 238	ERD25FJ103
R 239, 240	ERD25TJ333
R 241, 242	ERD25FJ102
R 243, 244	ERD25TJ473
R 245, 246	ERD25FJ101
R 247, 248	ERD25TJ473
R 249, 250	ERD25FJ103
R 251, 252	ERD25FJ102
R 253, 254	ERD25FJ392
R 255, 256	ERD25TJ333
R 257, 258	ERD25TJ104
R 259, 260	ERD25FJ472
R 261, 262	ERD25TJ333
R 263, 264	ERD25FJ682
R 265, 266	ERD25FJ472
R 267, 268 [DB]	ERQ12HJ220
[For all European areas.] [N]	ERD25FJ220
[For Asia, Latin America, Middle East and Africa areas.]	
R 269, 270	ERD25TJ393
R 271, 272	ERD25TJ223
R 273, 274	ERD25FJ332
R 275, 276	ERD25TJ333
R 277, 278	ERD25TJ394
R 279, 280	ERD25FJ102
R 281, 282	ERD25FJ8R2
R 283, 284	ERD25TJ333
R 285	ERD25FJ103
R 287	ERD25FJ392
R 289, 290	ERD25FJ103
R 291, 292	ERD25TJ155
R 301, 302, 303, 304	ERD25FJ471
R 305 [DB]	ERG1ANJ221
[For all European areas.] [N]	ERD50FJ221
[For Asia, Latin America, Middle East and Africa areas.]	
R 306, 307	ERD25TJ473
R 309	ERD25TJ223
R 310	ERD25TJ104
R 311	ERD25TJ473
R 312	ERD25TJ183
R 314	ERD25FJ182
R 315	ERD25FJ102
R 316	ERD25FJ103
R 317, 318	ERD25FJ472
R 319, 320	ERD25TJ154
R 321, 322	ERD25TJ683
R 323, 324	ERD25FJ563
R 325, 326	ERD25TJ224
R 327, 328	ERD25FJ222
R 329 [DB]	ERQ12HJ100
[For all European areas.] [N]	ERD25FJ100
[For Asia, Latin America, Middle East and Africa areas.]	
R 330, 331	ERD25FJ562
R 333	ERD25TJ104
R 336	ERD25FJ332
R 337, 338	ERD25TJ684
R 339, 340	ERD25FJ562
R 401 [DB]	ERD25FJ681
[For all European areas.] R 402	ERD25TJ123
R 403 [DB] ⚠	ERQ12AJ2R7
[For all European areas.] [N] ⚠	ERX12ANJ2R7
[For Asia, Latin America, Middle East and Africa areas.]	
R 404	ERD25FJ102
R 405	ERD25FJ222
R 406 [DB]	ERD25FJ561
[For all European areas.] [N]	ERD25FJ122
[For Asia, Latin America, Middle East and Africa areas.]	
R 407	ERD25FJ472
R 408	ERD25FJ562
R 409	ERD25FJ103
R 410 [DB]	ERD25FJ103
[For all European areas.]	
R 411	ERD25FJ102
R 412	ERD25FJ222
R 413 [DB] ⚠	ERQ12AJ4R7
[For all European areas.] [N] ⚠	ERX12ANJ4R7
[For Asia, Latin America, Middle East and Africa areas.]	
R 414	ERD25TJ823
R 415	ERD25FJ103
R 416	ERD25FJ391
R 417 [DB]	ERQ12AJ8R2
[For all European areas.] [N]	ERD25FJ8R2
[For Asia, Latin America, Middle East and Africa areas.]	
R 418 [DB] ⚠	ERQ12AJ2R2
[For all European areas.] [N] ⚠	ERX12ANJ2R2
[For Asia, Latin America, Middle East and Africa areas.]	
R 419 ⚠	ERD50FJ221
R 421	ERG2ANJ100
R 422	ERD25FJ122
R 423	ERD25FJ102
R 424 [DB]	ERD25FJ103
[For all European areas.]	
R 425 [DB]	ERD25TJ333
[For all European areas.]	
R 426, 427 [DB]	ERX12ANJ271
[For all European areas.] [N]	ERD25FJ151
[For Asia, Latin America, Middle East and Africa areas.]	
R 428	ERD25FJ470
R 429	ERD25FJ472
R 501	ERD25TJ223
R 502, 503, 504, 505	ERD25TJ273
R 506	ERD25FJ331
R 507	ERD25FJ271
R 508	ERD25FJ331
R 509	ERD25FJ271
R 510	ERD25FJ331
R 511	ERD25FJ271
R 512	ERD25TJ104
R 513	ERD25TJ223
R 514	ERD25FJ562
R 515	ERD25FJR47
R 516	ERD25FJ1R5
R 517	ERD25FJ222
R 520	ERD25FJ103
R 523	ERD25FJ222
R 524, 525	ERD25FJ272
R 526	ERD25FJ562
R 527	ERD25FJ471
R 528	ERD25TJ184
R 601	ERD25FJ221
R 602	ERD25TJ273
R 603	ERD25TJ153
R 604	ERD25TJ273
R 605, 606	ERD25FJ472
R 607	ERD25TJ333
R 608, 609	ERD25FJ682
R 611	ERO25CKG9312
R 612, 613, 614, 615	ERD25FJ471
R 616, 617, 618, 619	ERD25FJ103
R 620	ERD50FJ1R0
R 621	ERD25FJ150
R 622, 623	ERD25FJ270
R 624	ERD25FJ391
R 625	ERQ14AJ680
R 626	ERD25FJ391
R 628	ERD25TJ473
R 629	ERD25FJ272
R 801	ERD25TJ133
R 802	ERD25TJ473
R 803	ERD25FJ181
R 804, 805	ERD25TJ225
R 806	ERD25FJ102
R 807	ERD25FJ472
R 808	ERD25FJ152
R 809	ERD25FJ162
R 810	ERD25TJ153
R 811, 812	ERD25FJ103
R 813	ERD25FJ102
R 814	ERD25TJ154
R 815, 816	ERD25TJ473
R 817	ERD25TJ274
R 818	ERD25TJ184
R 819	ERD25FJ103
R 820	ERD25FJ432
R 821	ERD25TJ105
R 822, 823, 824, 825	ERD25TJ225
R 826	ERD25FJ102
R 827	ERD25FJ103
R 828	ERD25FJ332
R 829, 830	ERD25FJ102
R 831	ERD25FJ272
R 832	ERD25TJ393
R 833	ERD25FJ272
R 834	ERD25TJ473
R 835	ERD25FJ181
R 836	ERD25FJ472
R 837	ERD25FJ222
R 838	ERD25TJ105
R 839	ERD25TJ473
R 840	ERD25TJ133
R 841 •	ERD25TJ473
R 842, 843	ERD25TJ225
R 844	ERD25TJ184
R 845	ERD25TJ124
R 846	ERD25TJ184
R 847	ERD25TJ274
R 848, 849	ERD25TJ474
R 850	ERD25FJ122

VARIABLE RESISTORS

VR 1, 2	EWJSEAF22A24
VR 3, 4	EVNM4AA00B24
VR 5, 6	EVNM4AA00B14
VR 11, 12	QWKGTA024A54
VR 13, 14	EVNM4AA00B25
VR 15	EVH4KA084B53
VR 201, 202, 203, 204	EVNM0AA00B54
VR 205, 206, 207, 208	EVNM0AA00B14
VR 301	EVNM4AA00B24
VR 302	EVNM4AA00B43
VR 501	EVNM4AA00B14
VR 601	EVNM0AA00B14
VR 801, 802	EVNK0AA00B23

CAPACITORS

C 1, 2	ECEA1HS100
C 3, 4	ECEA50ZR47
C 5, 6	ECEA50Z1
C 7, 8	ECFDD103KXY
C 9, 10, 11	ECKD1H103ZF
C 12	ECKD1H223ZF
C 13, 14	ECKD1H391KB
C 15, 16	ECEA16M10R
C 17, 18	ECKD1H223ZF
C 19, 20	ECKD2H121KB
C 21, 22	ECFDD272KVY
C 23, 24	ECEA1AS221
C 25, 26	ECCD1H101K
C 27, 28	ECEA50Z1
C 29, 30	ECEA1AS470
C 31, 32	ECKD1H392KB
C 33, 34	ECEA50Z1
C 35, 36	ECFDD102KVY
C 37, 38	ECQM1H153JZ
C 39, 40	ECCD1H101K
C 41, 42	ECEA1AS221
C 43, 44	ECQM1H123JZ
C 45, 46	ECQM1H392JZ
C 47, 48	ECKD1H223ZF
C 49, 50	ECEA1AS471
C 51, 52	ECEA50Z2R2
C 53, 54	ECEA1HS100
C 55, 56	ECEA50Z3R3
C 57, 58	ECQM1H223JZ
C 59, 60	ECQM1H562JZ
C 61, 62	ECQM1H393JZ
C 63	ECEA1CN100T
C 64	ECEA50ZR47
C 65, 66	ECQM1H683JZ
C 67, 68	ECQM1H562JZ
C 69, 70	ECEA1ES220
C 71, 72	ECCD1H221K
C 73, 74	ECEA1CS221
C 75, 76	ECFDD103KXY
C 77, 78	ECQV05684JZ
C 79, 80	ECEA1CS330
C 81, 82	ECFDD223KXY
C 83	ECEA1HS100
C 84	ECEA1AS101
C 85	ECFDD104KXY
C 86	ECEA1HS100
C 87	ECFDD104KXY
C 88, 89	ECCD1H101K
C 90	ECFDD153KXY
C 91	ECKD1H103ZF
C 92	ECQM1H822JZ
C 93 [DB]	ECEA1HF100
[For all European areas.] [N]	ECSF25E4R7
[For Asia, Latin America, Middle East and Africa areas.]	
C 94	ECEA25Z4R7
C 95	ECEA1ES470
C 96 [DB]	ECEA1HF100
[For all European areas.]	
C 98	ECQV05334JZ
C 99	ECKD1H392KB
C 100	ECEA50ZR22
C 101	ECEA1HS100
C 102	ECEA25Z4R7
C 103, 104	ECQM1H103JZ
C 105, 106	ECKD1H102KB
C 107	ECQP1153JZ
C 108	ECKD1H103ZF
C 109	ECEA25Z4R7
C 110	ECEA50ZR47
C 111, 112, 113, 114	ECKD1H102KB
C 201, 202	ECEA25Z4R7
C 203, 204	ECEA50Z1
C 205, 206, 207, 208	ECQV05104JZ

REPLACEMENT PARTS LIST

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Ref No.	Part No.
C 209, 210	ECQV05334JZ
C 211, 212	ECCD1H221K
C 213, 214	ECQM1H103JZ
C 215, 216	ECCD1H101K
C 217, 218	ECQM1H103JZ
C 219, 220	ECCD1H101K
C 221, 222, 223, 224	ECEA25Z4R7
C 225, 226, 227, 228	ECQV05104JZ
C 229, 230, 231, 232	ECQM1H332JZ
C 233, 234	ECCD1H331K
C 235, 236	ECQV05104JZ
C 237, 238	ECQM1H103JZ
C 239, 240	ECQM1H102JZ
C 241, 242	ECEA16M10R
C 243, 244	ECEA1HS100
C 245	ECQM1H102JZ
C 247, 248	ECEA1ES470
C 249, 250	ECCD1H151K
C 301	ECQM1H104JZ
C 302	ECFDD223KXY
C 303, 304	ECEA50Z1
C 305, 306	ECEA50ZR47
C 307, 308	ECEA1HS100
C 309	ECEA1ES101
C 310	ECFDD473KXY
C 401	ECQP1103JZ
C 402 △	ECEA1ES222
C 403	ECEA1ES101
C 404	ECKD1H103ZF
C 405	ECEA1ES220
C 406	ECEA50Z2R2
C 407	ECEA1ES101
C 408 △	ECEA1ES222
C 409	ECEA1ES101
C 410	ECKD1H103ZF
C 411	ECKD1H102KB
C 412	ECEA50Z1
C 413, 414	ECEA1ES101
C 415	ECEA1ES470
C 416, 417	ECEA1CS472
C 418	ECEA1HS100
C 419	ECKD1H102KB
C 420 △	ECQU2A103MF
C 421, 422, 423, 424, 425, 426, 428, 429	ECFDD683KXY
C 430 △	ECEA1ES332
C 431	ECEA1AS101
C 502	ECKD1H102MD
C 503	ECCD1H331K
C 504	ECEA1AS221
C 505	ECKD1H333ZF
C 506	ECEA50Z2R2
C 507	ECKD1H222MD
C 508	ECEA1CN100
C 511	ECEA50ZR1
C 601	ECEA50MR68R
C 602	ECQM1H822JZ
C 603	ECQM1H183JZ
C 604	ECQM1H332JZ
C 605	ECQP1822JZ
C 606	ECQM1H562JZ
C 607	ECQM1H473JZ
C 608	ECQV05334JZ
C 609	ECQM1H223JZ
C 610	ECEA50Z1
C 611	ECQM1H562JZ
C 612	ECQV05154JZ
C 613	ECSF10E3R3
C 614, 615	ECEA1EN4R7
C 616	ECEA1HF100
C 617	ECSF35E2R2
C 618	ECQM1H562JZ
C 801	ECEA50Z1
C 803	ECEA1HS100
C 804	ECEA25Z4R7
C 805	ECEA50Z1
C 806	ECQM1H273JZ
C 807	ECQM1H103JZ
C 808	ECEA1HS100
C 809	ECQM1H562JZ

Ref No.	Part No.
C 810	ECQV05334JZ
C 811	ECEA50ZR33
C 812, 813	ECQM1H104JZ
C 814	ECEA1HS100
C 815	ECQM1H473JZ
C 816	ECQM1H222JZ
C 817	ECEA1HS100
C 818	ECQM1H473JZ
C 819	ECQM1H222JZ
C 820	ECKD1H471KB
C 821	ECQM1H103JZ
C 822	ECQM1H332JZ
C 823	ECQM1H183JZ
C 824	ECQM1H562JZ
C 825	ECQM1H273JZ
C 826	ECQM1H103JZ
C 827	ECEA1HS100
C 828	ECQV05154JZ
C 829	ECQM1H473JZ
C 830	ECEA1HS100
C 831	ECQV05224JZ
C 832	ECKD1H471KB
C 833	ECQM1H122JZ

COMBINATION PARTS

Z 301	EXRP682M473T
Z 501	EXBEQ5273K
Z 502	EXBD86181K
Z 503	EXBEQ4272K
Z 504	QCRFWA1
Z 505	EXFP4472Z
Z 506	EXBD88254K
Z 507	EXRP152K473T

TRANSISTORS

Q 1, 2, 3, 4	2SD636
Q 5	2SB641
Q 6	2SC945-Q
Q 7, 8	2SD965
Q 9, 10, 11	2SD1011
Q 12	2SA921
Q 13, 14	2SD965
Q 15	2SD636
Q 16	2SB641
Q 17, 18, 19, 20	2SK104
Q 21	2SC945-Q
Q 22, 23, 24	2SD636
Q 25	2SD592
Q 26	2SD946
Q 27, 28	2SB641
Q 29	2SD636
Q 30, 31	2SC945-Q
Q 32	2SA722-S
Q 33, 34	2SD636
Q 201, 202	2SK104
Q 203, 204	2SC945
Q 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220	2SD1010
Q 221, 222, 223, 224	2SC945-Q
Q 225	2SA722-S
Q 301, 302	2SD636
Q 303	2SB641
Q 401	2SD836
Q 402	2SD636
Q 403	2SB641
Q 404	2SB750
Q 405	2SC1846R
Q 406	2SD946
Q 407 [DB]	2SD636 [For all European areas.]
Q 408	2SB643
Q 501, 502, 503, 504, 505	2SB643
Q 506	2SD636
Q 507, 508	2SD965
Q 601, 602, 603, 604	2SB643

Ref No.	Part No.
Q 605	2SA886-Q
Q 606, 607	2SD636
Q 801, 802, 803, 804, 805, 806, 807, 808	2SK104
Q 809, 810, 811, 812, 813, 814, 815, 816, 817	2SD636

DIODES & RECTIFIERS

D 1, 2, 3, 4	MA161
D 5	RVDRD7R5FB
D 6, 7, 8, 9, 10, 11	MA161
D 12	SM112
D 13, 14, 15, 16	MA161
D 17	RVDRD6R2EB
D 18, 19, 20	MA161
D 21	SM112
D 22, 23, 24	MA161
D 25, 26, 27	TLG208
D 28, 29	TLR208
D 30	TLG208
D 31	TLY208
D 32	TLG208
D 33	MA161
D 201, 202, 203, 204,	MA161
D 301, 302, 303, 304, 305, 306	MA161
D 401, 402, 403, 404 △	SM112
D 405	MA1051
D 406	MA1150
D 407	MA1082
D 408	SM112
D 409	MA1056
D 410, 411	MA161
D 412	SM112
D 413	MA1082
D 414	MA1047
D 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515	MA161
D 516	LN31GPHL
D 517	LN21RPHL
D 518	LN41YPHL
D 519	MA161
D 801, 802, 803, 804	MA161
D 805	OA90M

INEGRATED CIRCUITS

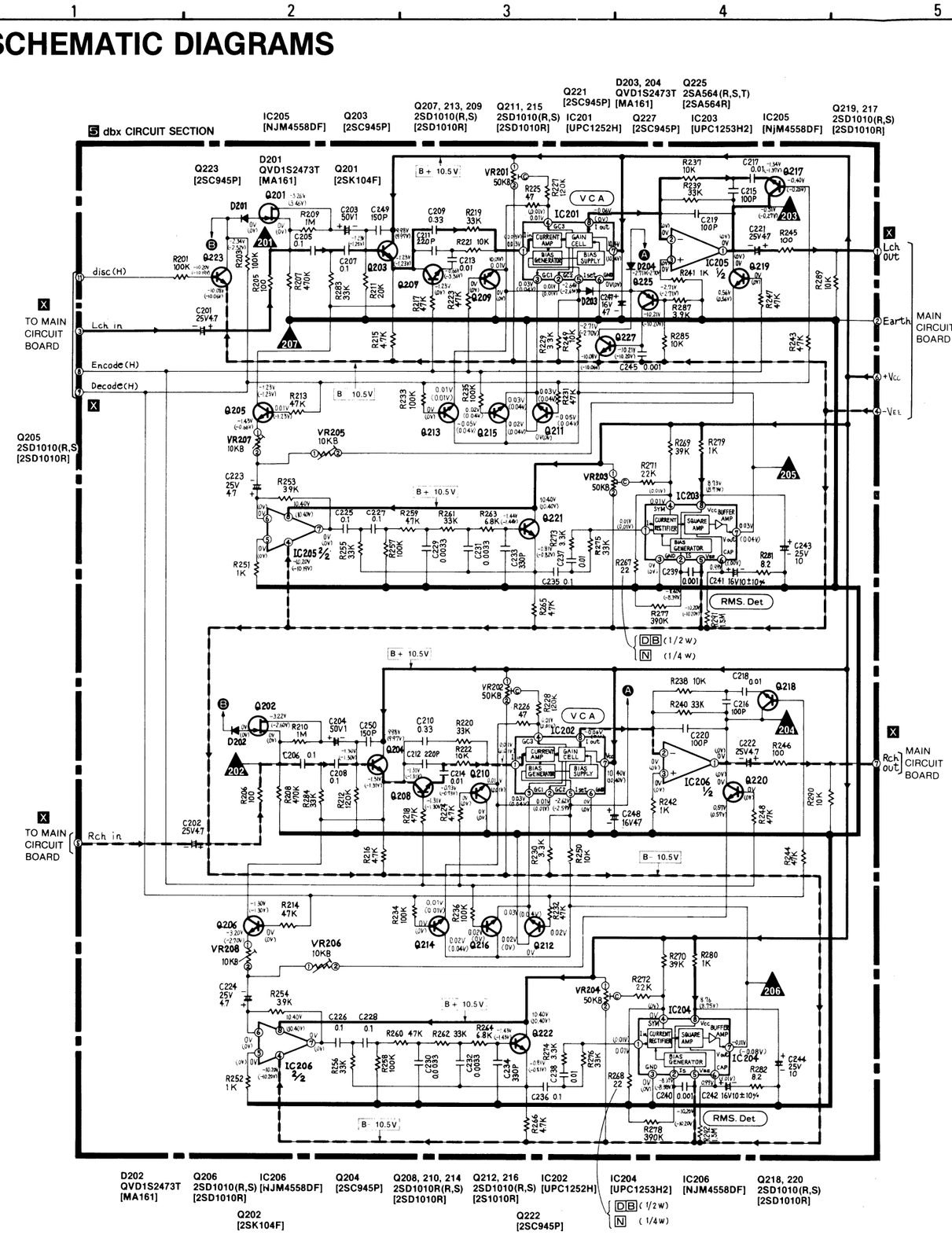
IC 1, 2	AN6212
IC 3, 4	AN6213
IC 5	AN6256
IC 6	AN6214
IC 7	BA336
IC 201, 202	UPC1252H
IC 203, 204	UPC1253H2
IC 205, 206	NJM4558DF
IC 301	AN6870N
IC 302, 303	AN6280
IC 304	AN6552
IC 305	BA6138
IC 501	MN1405RHB
IC 502	AN6270
IC 503	DN6838A
IC 601	AN6633
IC 801, 802	NE645N
IC 803	AN6552

HALL ELEMENTS

H 1, 2	QVZVHE711H

Ref No.	Part No.	Part Name & Description
COILS		
L 1, 2	QLQX0343KWA	Bias Trap Coil
L 3, 4	QLM9Z9K	MPX Filter
L 5, 6, 7	QLQX0332KWA	Peaking Coil
L 501	ELEH101KA	Choke Coil
L 502, 503	QLQZ1014D	Choke Coil
L 504, 505	ELEH101KA	Choke Coil
L 801	QLQX0343KWA	Peaking Coil
L 802	QLQX0343KWA	Peaking Coil
L 803	QLQX0332KWA	Bias Trap Coil
TRANSFORMERS		
T 1	QLB0198	Bias Oscillation Transformer
T 401		
[DB] △	QLPD71EMX	AC Power Transformer [For all European areas.]
[N] △	QLPA66EMX	AC Power Transformer [For Asia, Latin America, Middle East and Africa areas.]
FUSES		
F 1		
[DB] △	XBAQ0010	Fuse (T 1.6A) [For all European areas.]
[N] △	XBA2E05NS5	Fuse (T 0.5A) [For Asia, Latin America, Middle East and Africa areas.]
F 2		
[DB] △	XBAQ0010	Fuse (T 1.6A) [For all European areas.]
F 3		
[DB] △	XBAQ025031	Fuse (T 250mA) [For all European areas.]
F 4		
[DB] △	XBAQ0007	Fuse (T 400mA) [For all European areas.]
SWITCHES		
S 1	QSR6501	Rotary Switch (NR Selector)
S 401 △	QSW1117AS	Push Switch (Power ON/OFF)
S 402 △	QSR1407	Rotary Switch (AC Power Voltage Selector)
S 501	QSW1118	Poush Switch (Counter Reset ON/OFF)
S 502	QSW1118	Push Switch (Pause ON/OFF)
S 503	QSW1118	Push Switch (REC)
S 504	QSW1118	Push Switch (STOP)
S 505	QSW1118	Push Switch (PLAY)
S 506	QSW1118	Push Switch (FF)
S 507	QSW1118	Push Switch (REW)
S 508	QSW1118	Push Switch (REC Mute)
S 509	QSW1118	Push Switch (Introduction Search)
S 511, 512, 513, 514	QSWY408	4 Key Push Switch
S 515	QSS1303	Timer Switch
S 601	QSB0260	Leaf Swicth (Accidental Erase Prevention)
S 602	QSB0260	Leaf Switch (Mode)
S 603	QSB0261	Leaf Switch (Playback)
S 604	QSB0260	Leaf Switch (Stop)
S 605	QSB0261	Leaf Switch (Cassette Detection)
S 606, 607	QSB0266	Leaf Switch (Auto Tape Selector)
JACKS		
J 1, 2	QJA0262	Microphones Jack
J 3	QJA0259	Headphones Jack
J 4	QEJ5003S	Pin Jack Board

SCHEMATIC DIAGRAMS



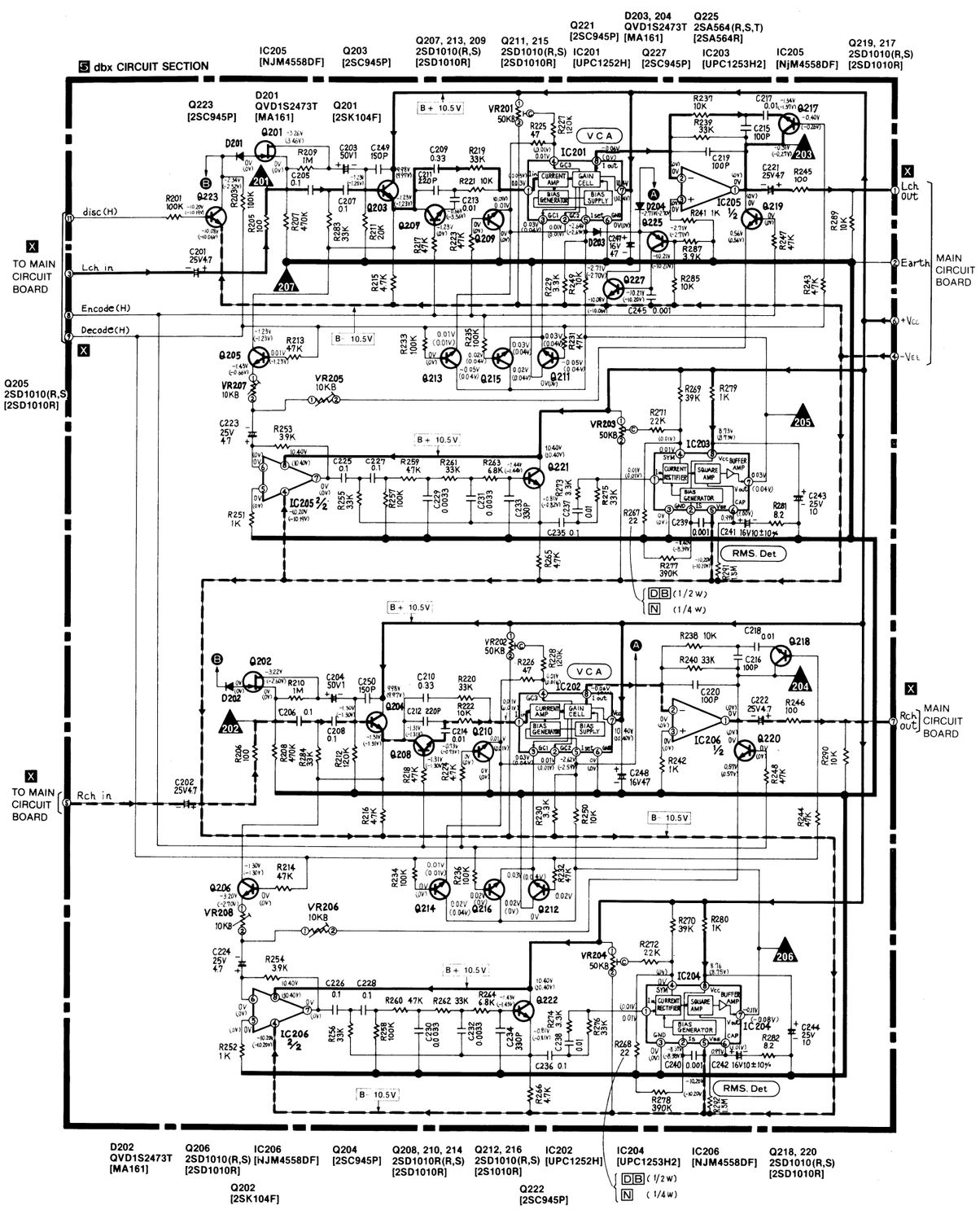
NOTES:

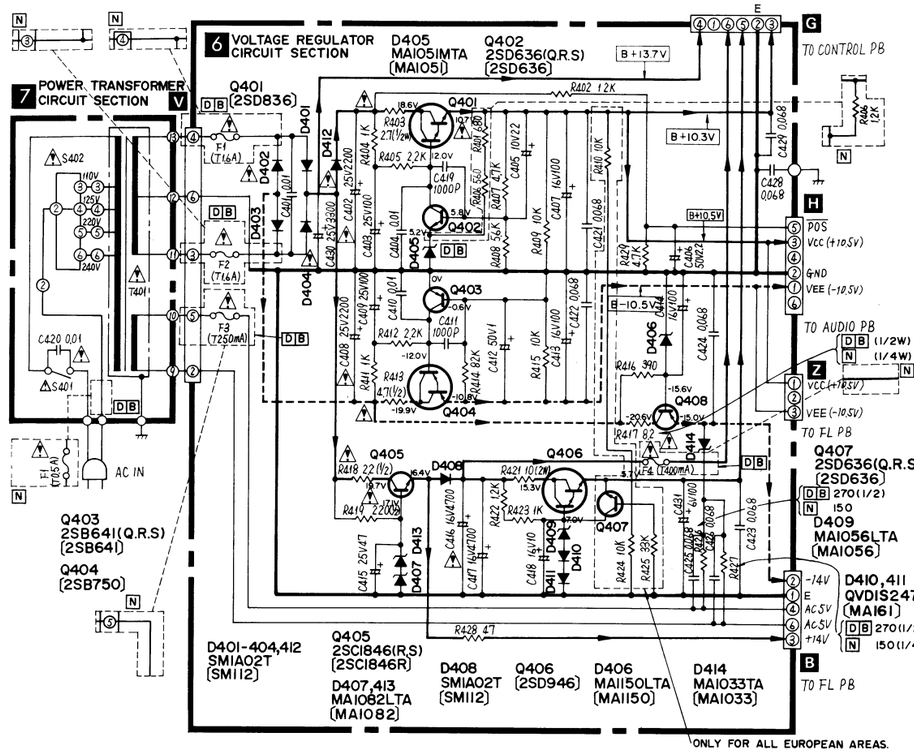
- D ..... For a excep
- B ..... For U
- N ..... For A Midd areas

NOTES:

- S401...
- VR201, 2
- VR203, 2
- VR205, 2
- VR207, 2
- Resistan 1K = 1,0
- Capacity
- The mar
- All volta playback specified
- Voltage No ma (
- Voltage No ma (

SCHEMATIC DIAGRAMS





NOTES:

- D ..... For all European areas except United Kingdom.
- B ..... For United Kingdom.
- N ..... For Asia, Latin America, Middle East and Africa areas.

NOTES:

- S401 ..... AC power switch
- VR201, 202 .... VCA symmetry adjustment VR
- VR203, 204 .... RMS detector adjustment VR
- VR205, 206 .... dbx standard level adjustment VR (Encode)
- VR207, 208 .... dbx standard level adjustment VR (Decode)
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. 1K = 1,000 (Ω), 1M = 1,000 k(Ω).
- Capacity are in micro-farads (μF) unless specified otherwise.
- The mark (▼) shows test point. e.g. ▽ = Test point 1.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  - Voltage values shown in dbx section.
    No mark ..... Voltage values at dbx Tape and playback mode.
    ( ) ..... Voltage values at dbx Tape and record mode.
  - Voltage values shown in voltage regulator section.
    No mark ..... Voltage values at playback mode.
    ( ) ..... Voltage values at record mode.

For measurement use VTVM.

- (▬) indicates B + (bias).
- (▬) indicates B − (bias).
- (▬) indicates the flow of the recording signal (dbx tape).
- (▬) indicates the flow of the playback signal (dbx tape).
- Described in the schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes.
  One type of number is used for supply parts number and production parts number when they are identical.

  e.g. Q1
  2SC1844(E, F) ← Production parts number
  [2SC1844E] ← Supply parts number
  D212
  1S2473T77 ← Production parts number
  [MA161] ← Supply parts numbers

- The supply parts number is described alone in the replacement parts list.

• This schematic diagram may be modified at any time with the development of new technology.

SCHEMATIC DIAGRAM

8 FL METER CIRCUIT SECTION

NOTES:
- D ..... For all European areas except United Kingdom.
- B ..... For United Kingdom.
- N ..... For Asia, Latin America, Middle East and Africa areas.

TO TIMER CIRCUIT BOARD
Memory/Repeat +13.5V
PeaK Reset

A IC305 [BA6138] IC304 [AN6552] IC302, 303 [AN6280] IC301 [AN6870N]

Counter Drive

IC302

R301 470
R302 470
R303 470
R304 470

TO CONTROL CIRCUIT BOARD

Z301 47K 6800P

IC303

- 13.5V
+ 13.5V
AC4.5V
AC4.5V
E

TO POWER CIRCUIT BOARD

C302 0.022
R306 47K STOP -7.4V -10.8V
Q301
R307 -10V 47K STOP -10.2V -10.1V
Q302 (-9.7V)
R314 1.8K
R315 1K
R311 47K STOP 24V
Q303
301 3.1V
R312 3.1K 18K
R309 22K -10V
R310 100K
D301 D302 D303
Level Meter Drive
Mute & Peak Reset Control
R305 220 (1W)
10K VR301

IC305
10.8V 0.1V
Vcc Vref MUT
IN1 IN2 VCOMP AMP OUT
2.0V OUT1 OUT2 (0.8V)
GND DET2 DET1 0.6V

R319 150K
IC304
15.0V
C307 16V10
D305
C308 16V10
D306
0.2V (1.5V)
-10.4V
R320 150K
R321 68K
R322 68K
R323 56K
R324 56K
R325 220K
R326 220K
R327 2.2K
R328 2.2K
R329 (2W) 10 (N) (1W)
C309 16V 100
C305 50V 0.47
C306 50V 0.47
R330 5.6K
R331 3.3K
R336 3.3K
R339 5.6K
R340 5.6K
R338 680K
R337 680K
C304 50V1
C303 50V1
C310 0.047
VR302 5K
R318 4.7K
R317 4.7K

R MM
Lch Sig
Rch Sig
J-bar

C

TO AUDIO MAIN CIRCUIT BOARD

Log Compress AMP
Detector

IC 301
-9.2V -1.2V -6.8V 7.4V STOP -10.8V
-10.2V 9.8V -0.9V -7.8V -1.1V

R316 10K
R333 100K

Z +10.5V −10.5V

TO POWER CIRCUIT BOARD

Q301, 302 2SD636(R,S) [2SD636R]

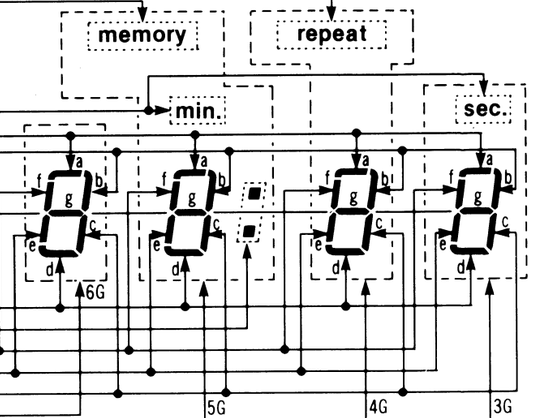
D301 ~ 303 QVD1S2473T
305, 306 [MA161]

Q303 2SB641(R,S) [2SB641R]

Q304 2SA564(R,S,T) [2SA564R]

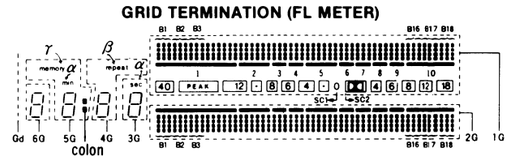
FL Meter

17 Repeat
19 Memory
9 d
8 5G
7 e
6 f
5 g
4 6G
45
16 Min,Sec
14 a
13 3G
12 b
11 4G
10 c
47
1
21 a~e
32 f~i
41 B18
40 B17
39 B16
38 B15
37 B14
36 B13
35 B12
34 B11
33 B10
20 SC1
43 SC2
30 B9
29 B8
28 B7
27 B6
26 B5
25 B4
24 B3
23 B2
22 B1
18. 31. 44. 2G
15. 46. 1G
2 } Gd
3 }
42 J



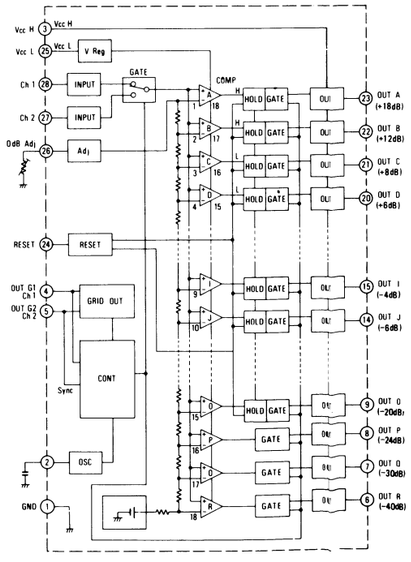
Digital Multi Counter (FL Meter)

GRID TERMINATION (FL METER)



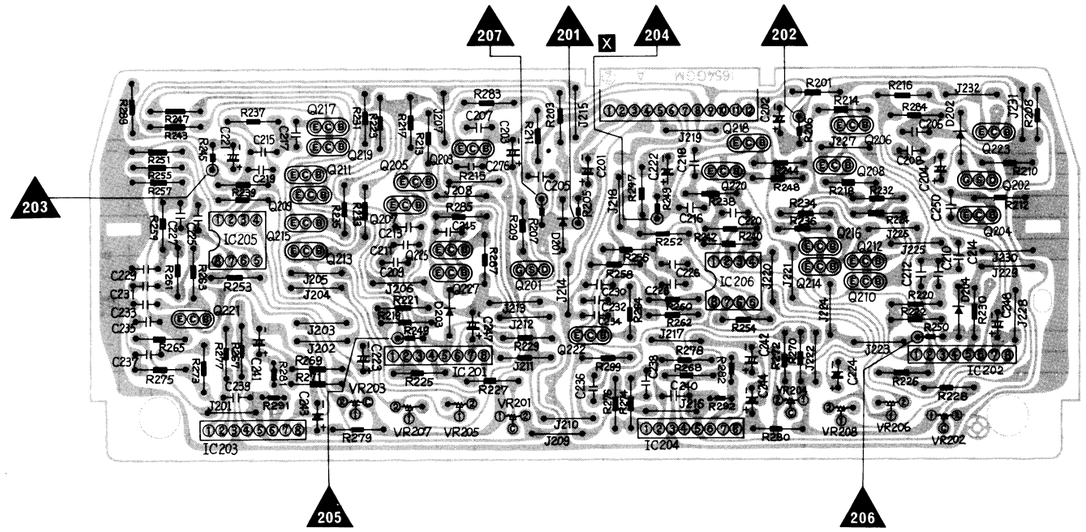
EQUIVALENT CIRCUIT

IC301 AN6870N



CIRCUIT BOARDS

5 dbx CIRCUIT BOARD



Q201 2SK104F [2SK104]

G	0V
S	0V
D	−3.26V (3.46V)

Q202 2SK104F [2SK104]

G	0V
S	0V
D	−3.22V (−2.60V)

Q203 2SC945P

B	−1.23V
C	9.98V (9.97V)
E	−1.23V

Q204 2SC945P

B	−1.30V
C	9.98V (9.97V)
E	−0.68V (−0.67V)

Q205 2SD1010RST [2SD1010]

B	0.01V (−1.23V)
C	−1.23V (−1.23V)
E	−1.43V (−0.66V)

Q206 2SD1010RST [2SD1010]

B	0V
C	−1.30V
E	−3.20V (−2.70V)

Q207 2SD1010RST [2SD1010]

B	−1.23V (0V)
C	−1.23V
E	−0.66V (−3.36V)

Q208 2SD1010RST [2SD1010]

B	−1.31V (−1.30V)
C	−1.31V (−1.30V)
E	−0.73V

Q209 2SD1010RST [2SD1010]

B	0V
C	0V
E	0.57V

Q210 2SD1010RST [2SD1010]

B	0V
C	0V
E	0.59V

Q211 2SD1010RST [2SD1010]

B	−0.05V (0.04V)
C	0V
E	−1.42V (3.82V)

Q212 2SD1010RST [2SD1010]

B	0.02V
C	0V
E	−2.53V (−2.57V)

Q213 2SD1010RST [2SD1010]

B	0V
C	−0.05V (0.04V)
E	−2.39V (−2.69V)

Q214 2SD1010RST [2SD1010]

B	0V
C	0.02V (0.04V)
E	−2.48V (−2.60V)

Q215 2SD1010RST [2SD1010]

B	0.02V (0.04V)
C	0.02V (0.04V)
E	0.58V (0.61V)

Q216 2SD1010RST [2SD1010]

B	0.02V (0V)
C	0.02V (0V)
E	0.56V (0.57V)

Q217 2SD1010RST [2SD1010]

B	−0.40V (−0.26V)
C	−0.31V (−0.27V)
E	−1.34V (−1.35V)

Q218 2SD1010RST [2SD1010]

B	−0.06V (−0.02V)
C	0V
E	−2.30V (−1.29V)

Q219 2SD1010RST [2SD1010]

B	0V
C	0V
E	0.56V

Q220 2SD1010RST [2SD1010]

B	0V
C	0V
E	0.57V

Q221 2SC945P [2SC945-Q]

B	−1.44V
C	10.40V
E	−0.81V (−0.82V)

Q222 2SC945P [2SC945-Q]

B	−1.43V
C	10.40V
E	−0.81V

Q223 2SC945P [2SC945-Q]

B	−10.20V (−10.19V)
C	−2.34V (−2.52V)
E	−10.08V (−10.06V)

Q225 2SA722 [2SA772-S]

B	−2.71V
C	−9.71V (−9.62V)
E	−2.85V

Q227 2SC945P [2SC945-Q]

B	−10.21V (−10.20V)
C	−2.71V (−2.70V)
E	−9.66V (−9.69V)

Q401 [2SD836]

B	12.0V
C	18.6V
E	10.7V

Q402 2SD636QRS [2SD636]

B	5.8V
C	12.0V
E	5.2V

Q403 2SB641QRS [2SB641]

B	−0.6V
C	−12.0V
E	0V

Q404 [2SB750]

B	−12.0V
C	−19.9V
E	−10.8V

Q405 2SC1846RS [2SC1846R]

B	17.1V
C	19.7V
E	16.4V

Q406 [2SD946]

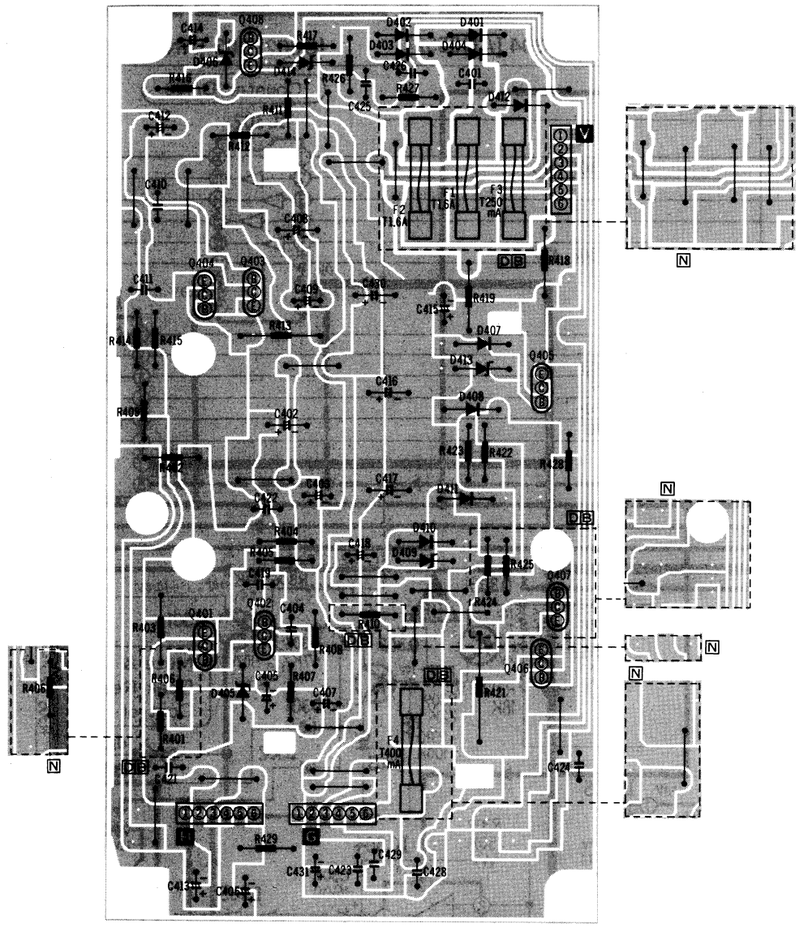
B	7.0V
C	15.3V
E	5.7V

Q407 2SD636QRS [2SD636]

B	4.6V
C	4.2V
E	5.6V

*For all European areas.

6 VOLTAGE REGULATOR CIRCUIT BOARD



IC201 [UPC1252H]

1	0.03V
2	0.01V
3	0.03V (0.04V)
4	0.01V
5	−2.64V (−2.63V)
6	0V
7	10.40V
8	−0.06V (0V)

IC202 [UPC1252H]

1	0.01V
2	0.01V
3	0.03V (0.04V)
4	0V
5	−2.62V (−2.59V)
6	0V
7	10.40V
8	−0.06V (0V)

IC203 UPC1253H2 [UPC1253H]

1	0.01 V
2	−8.40V (−8.39V)
3	0V
4	0.01V
5	−10.20V
6	0.99V (1.00V)
7	0.03V (0.04V)
8	8.73V

IC204 UPC1253H2 [UPC1253H]

1	0.01V
2	−8.39V (8.38V)
3	0V
4	0V
5	−10.20V
6	0.99V (1.01V)
7	−0.11V (−0.08V)
8	8.76V (8.75V)

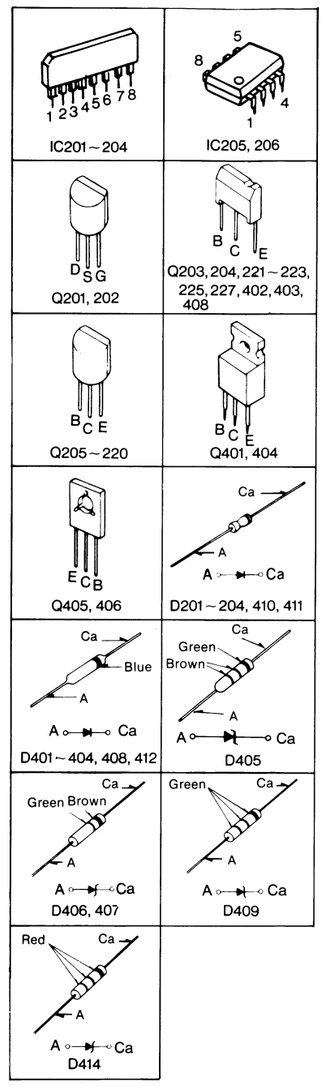
IC205 [NJM4558DF]

1	0V
2	0V
3	0V
4	−10.20V (−10.19V)
5	0V
6	0V
7	0V
8	10.40V

IC206 [NJM4558DF]

1	0V
2	0V
3	0V
4	−10.20V
5	0V
6	0V
7	0V
8	10.40V

TERMINATIONS



NOTES:

- [D] ..... For all European areas except United Kingdom.
- [B] ..... For United Kingdom.
- [N] ..... For Asia, Latin America, Middle East and Africa areas.

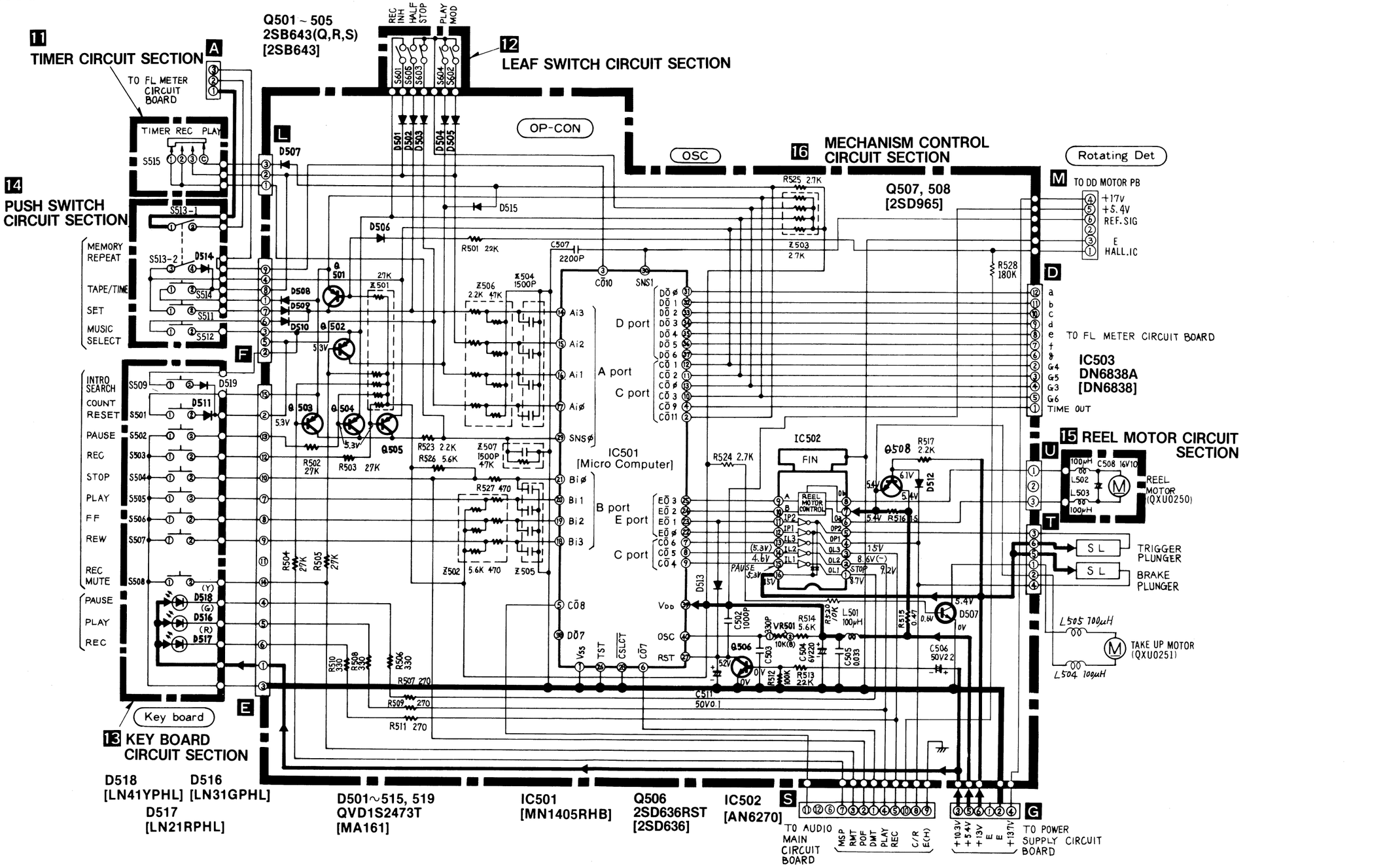
NOTES:

- The circuit shown in ▒▒ on the conductor side indicates printed circuit on the back side of the printed circuit board.
- Values indicated in [ ] are under no signal condition and playback mode with volume control at minimum position otherwise specified.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  - Voltage values shown in dbx section.
    No mark ..... Voltage values at dbx Tape and playback mode.
    ( ) ..... Voltage values at dbx Tape and record mode.
  - Voltage values shown in voltage regulator section.
    No mark ..... Voltage values at playback mode.
    ( ) ..... Voltage values at record mode.

  For measurement use VTVM.

- **This circuit board diagram may be modified at any time with the development of new technology.**

SCHEMATIC DIAGRAM — 16 MECHANISM CONTROL CIRCUIT SECTION



NOTES:

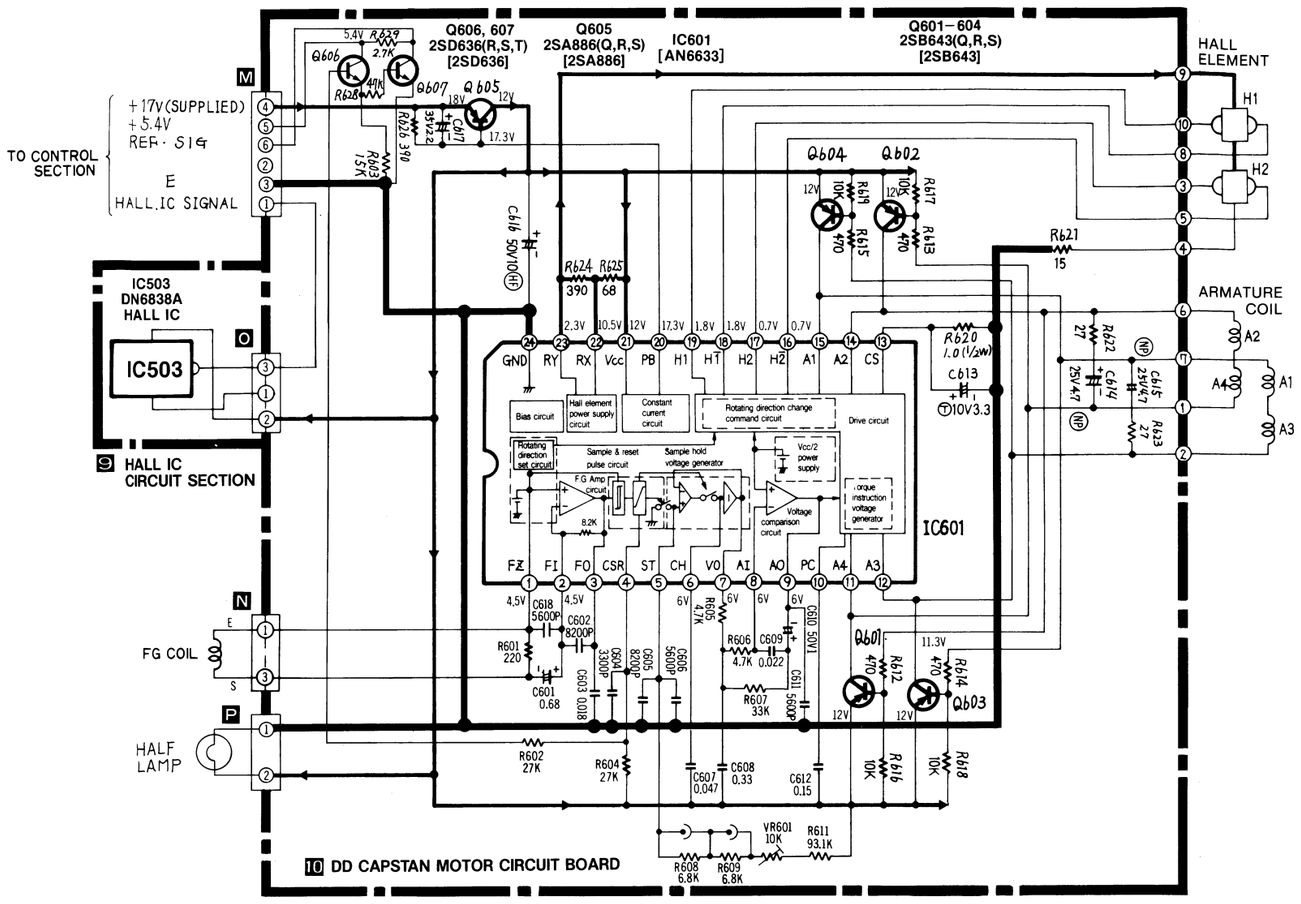
- VR501 ..... Input scanning time adjustment VR
- S501 ..... Counter reset switch
- S502 ..... Pause switch
- S503 ..... Record switch
- S504 ..... Stop switch
- S505 ..... Playback switch
- S506 ..... Fast Forward switch
- S507 ..... Rewind switch
- S508 ..... Record mute switch
- S509 ..... Memory repeat switch
- S511 ..... Set switch
- S512 ..... Music select switch
- S513 ..... Memory repeat switch
- S514 ..... Tape/Time select switch
- S515 ..... Timer switch (shown in REC position; (1) REC, (2) OFF, (3) PLAY)
- S601 ..... Accidental erase prevention switch
- S602 ..... Mode switch — Mode sensing switches
- S603 ..... Stop switch — Mode sensing switches
- S604 ..... Playback switch — Mode sensing switches
- S605 ..... Cassette detection switch — Mode sensing switches
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. 1K = 1,000 (Ω), 1M = 1,000 k(Ω).
- Capacity are in microfarads (μF) unless specified otherwise. P = Pico-farads.
- The mark (▼) shows test point. e.g. ∇ = Test point 1.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position. However, the voltage in record mode is indicated in ( ) when it differs from that in record mode. For measurement, use VTVM.
- Described in the schematic diagram are two types of numbers; the supply parts number and production parts number for transistors are diodes. One type of number is used for supply parts number and production parts number when they are identical.

e.g. Q1
2SC1844(E, F) ← Production parts number
[2SC1844E] ← Supply parts number
D301
QVD1S2473T ← Production parts number
[MA161] ← Supply parts

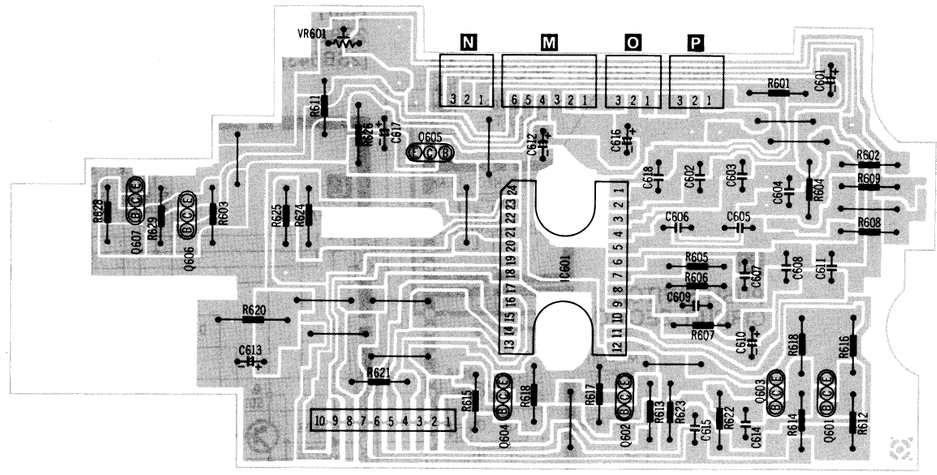
- The supply parts number is described alone in the replacement parts list.

• This schematic diagram may be modified at any time with the development of new technology.

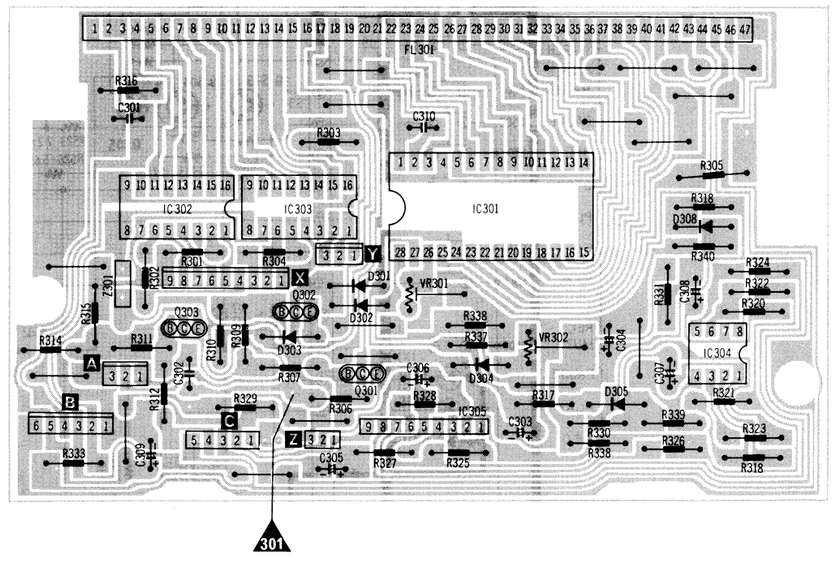
SCHEMATIC DIAGRAM



10 D.D CAPSTAN MOTOR CIRCUIT BOARD



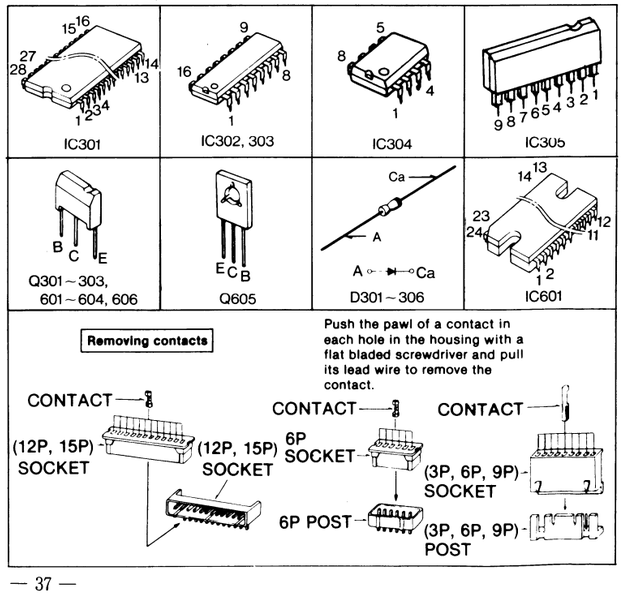
8 FL METER CIRCUIT SECTION



NOTES:
- VR301 . . . . FL meter adjustment VR (0dB indication)
- VR302 . . . . FL meter adjustment VR (−40dB indication)
- VR601 . . . . Tape speed adjustment VR
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. 1K = 1,000Ω, 1M = 1,000 k(Ω).
- Capacity are in micro-farads (μF) unless specified otherwise.
- The mark (▼) shows test point. e.g. ∇ = Test point 1.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  ( ) . . . . Voltage values at record mode.
  STOP . . . . . Voltage values at stop mode.
  For measurement use VTVM.
- (▬▶) indicates B + (bias).
- (▪▪▶) indicates B − (bias).
- (▪▪▪) indicates the flow of the recording signal (dbx tape).
- (▬▶) indicates the flow of the playback signal (dbx tape).
- Described in the schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes.
  One type of number is used for supply parts number and production parts number when they are identical.
  e.g. Q1
  2SC1844(E, F)◀— Production parts number
  [2SC1844E]◀— Supply parts number
  D212
  1S2473T77◀— Production parts number
  [MA161]◀— Supply parts numbers
- The supply parts number is described alone in the replacement parts list.

• This schematic diagram may be modified at any time with the development of new technology.

TERMINATIONS



IC302, 303 [AN6280]

7	0V
8	−14.8V
9	15.0V
10	0V

IC304 [AN6552]

1	0V
2	0V
3	0V
4	−10.8V
5	0V
6	0V
7	0V
8	15.0V

IC305 [BA6138]

1	0.1V
2	0V
3	0.6V
4	2.0V
5	0V
6	2.0V
7	0.6V
8	0V (0.6V)
9	10.8V

IC503 DN6838A [DN6838]

1	12V
2	0V
3	—

IC301 [AN6870N]

1	−10.8V
2	−8.3V
3	10.3V
4	−1.0V
5	−0.9V
24	−7.4V STOP −10.8V
25	5.3V
26	−6.8V
27	−9.7V
28	−9.7V

Q301 2SD636RST [2SD636]

B	−10.8V	STOP −10.1V
C	−7.4V	STOP −10.8V
E	−10.8V	

Q302 2SD636RST [2SD636]

B	−10.8V	STOP −10.1V
C	−9.7V	STOP −10.3V
E	−10.8V	STOP −10.3V

Q303 2SB641RS [2SB641]

B	—	STOP 2.4V
C	3.1V	
E	3.1V	

Q601, 602, 603, 604 2SB643QRS [2SB643]

B	—
C	—
E	12V

Q605 2SA886QRS [2SA886Q]

B	17.3V
C	12V
E	18V

Q606 2SD636RST [2SD636]

B	—
C	5.4V
E	—

IC601 [AN6633]

1	4.5V	13	—
2	4.5V	14	—
3	—	15	—
4	—	16	0.7V
5	—	17	0.7V
6	6V	18	1.8V
7	6V	19	1.8V
8	6V	20	17.3V
9	6V	21	12V
10	—	22	10.5V
11	—	23	2.3V
12	—	24	0V

Q607 2SD636RST [2SD636]

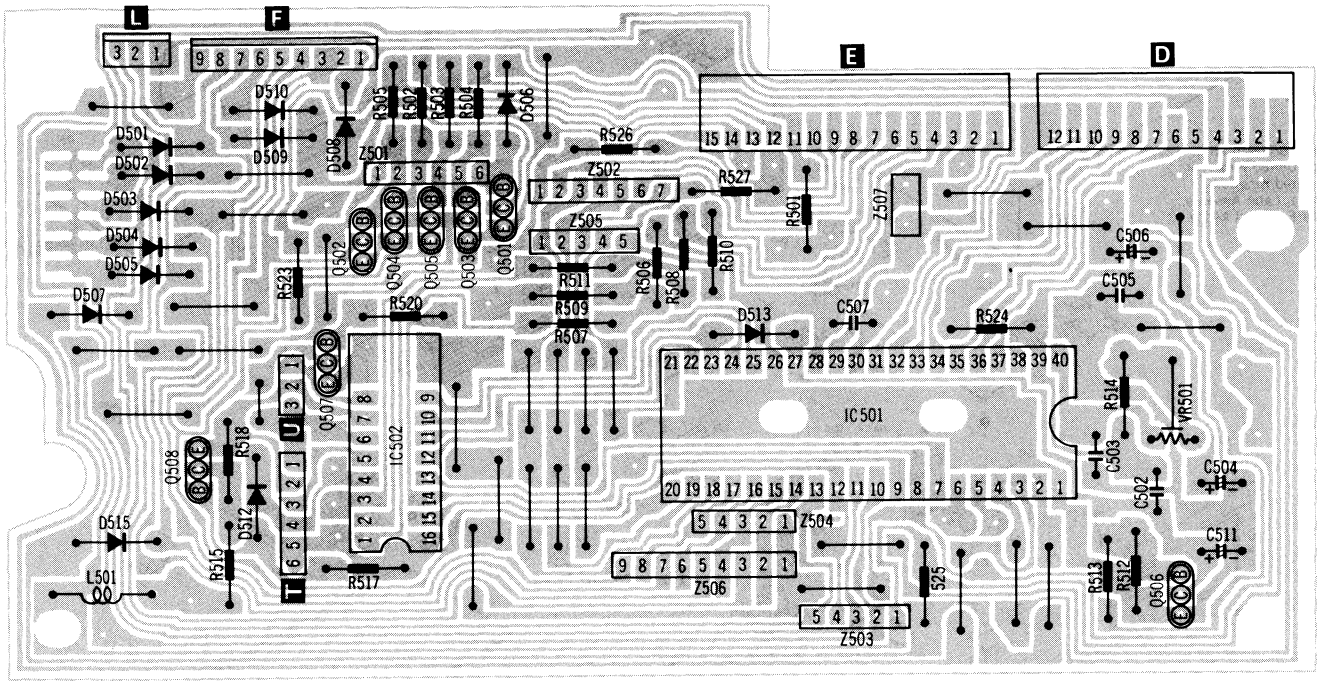
B	—
C	—
E	0V

NOTES:
- The circuit shown in ▭ on the conductor side indicates printed circuit on the back side of the printed circuit board.
- Values indicated in ▭ are under no signal condition and playback mode with volume control at minimum position otherwise specified.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  ( ) . . . . Voltage values at record mode.
  STOP . . . . . Voltage values at stop mode.
  For measurement use VTVM.

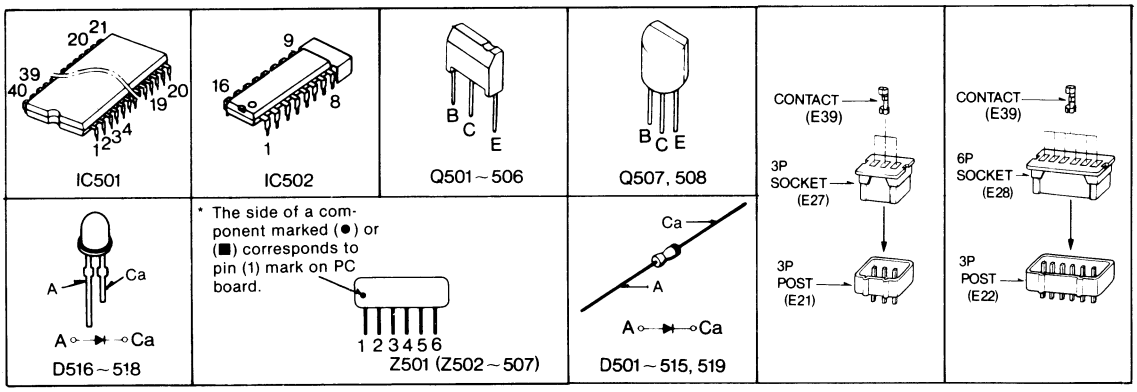
• This circuit board diagram may be modified at any time with the development of new technology.

CIRCUIT BOARD DIAGRAM

16 MECHANISM CONTROL CIRCUIT BOARD



TERMINATIONS



NOTES:

- The circuit shown in ▒▒ on the conductor side indicates printed circuit on the back side of the printed circuit board.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position. However, the voltage in record mode is indicated in ( ) when it differs from that in record mode. For measurement, use VTVM.

- **This circuit board diagram may be modified at any time with the development of new technology.**

Q501
2SB643QRS
[2SB643]

B	—
C	—
E	—

Q502, 503, 504, 505
2SB643QRS
[2SB643]

B	5.4V
C	—
E	—

Q506
2SD636RST
[2SD636]

B	0V
C	5.2V
E	0V

Q507
[2SD965]

B	0.6V
C	5.4V
E	0V

Q508
[2SD965]

B	6.0V
C	5.4V
E	5.4V

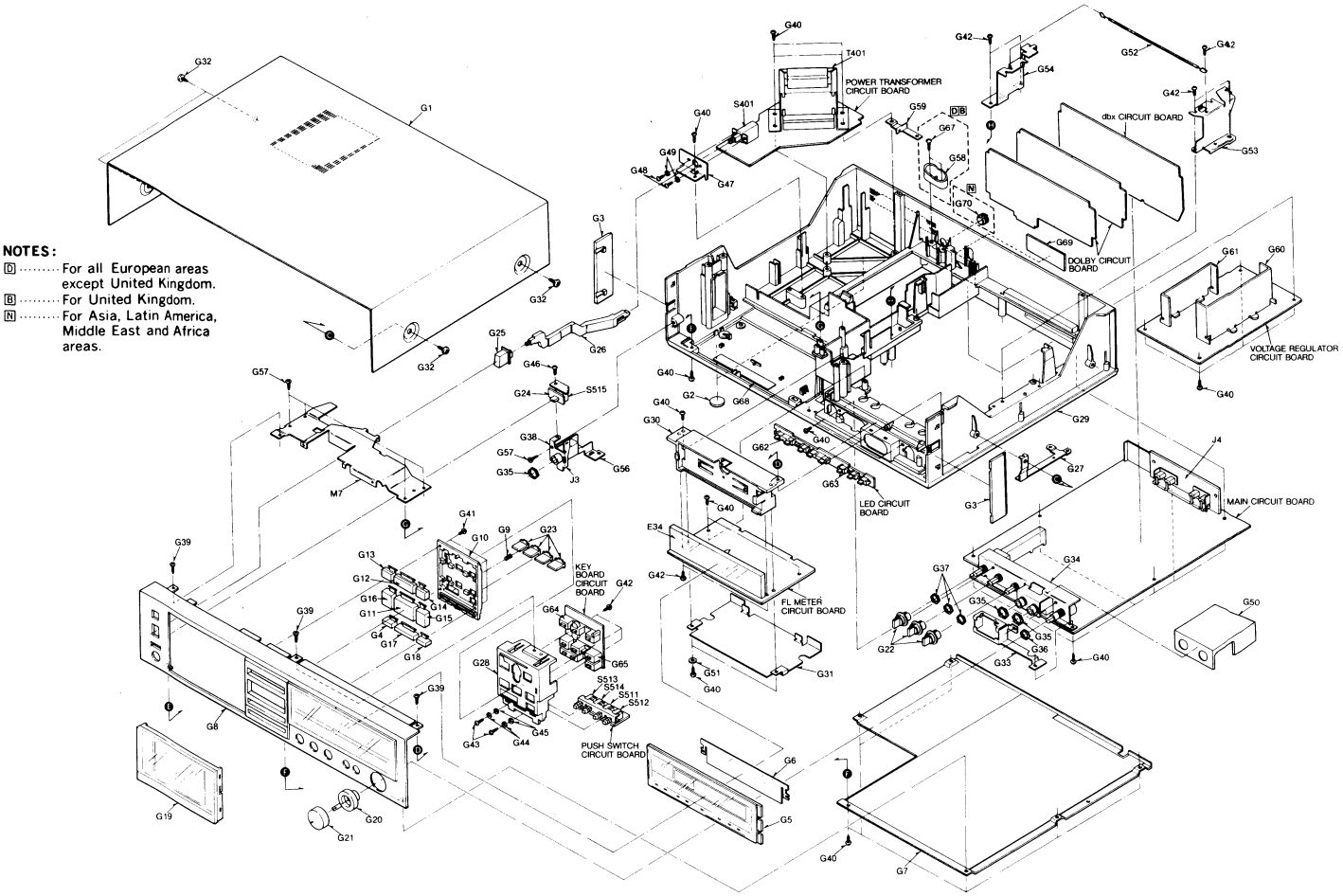
IC501
[MN1405RHB]

1	0V		21	5.4V	
2	0V		22	0V	
3	—		23	0V	
4	0V	TIME COUNT 5.3V	24	0V	
5	0V	INTRO SEARCH 5.3V	25	0V	
6	0V	STOP 5.3V	26	0V	
7	0V	(5.3V)	27	5.2V	
8	4.6V		28	0V	
9	0V	PAUSE 5.3V	29	—	
10	—		30	—	
11	—		31	—	
12	—		32	—	
13	—		33	—	
14	—		34	—	
15	—		35	—	
16	—		36	—	
17	—		37	—	
18	5.4V		38	—	
19	5.4V		39	5.4V	
20	5.4V		40	—	

IC502
[AN6270]

1	9.7V	PAUSE 0V
2	0V	STOP 9.2V
3	9.2V	(0V)
4	15V	FF/REW 0V
5	0V	
6	0V	
7	5.4V	
8	0V	
9	0V	
10	0V	
11	0V	
12	0V	
13	0V	(5.3V)
14	4.6V	
15	0V	PAUSE 5.3V
16	15V	

CABINET PARTS LOCATION


NOTES:
[D] ..... For all European areas except United Kingdom.
[B] ..... For United Kingdom.
[N] ..... For Asia, Latin America, Middle East and Africa areas.
POWER TRANSFORMER CIRCUIT BOARD
dbx CIRCUIT BOARD
DOLBY CIRCUIT BOARD
VOLTAGE REGULATOR CIRCUIT BOARD
MAIN CIRCUIT BOARD
LED CIRCUIT BOARD
FL METER CIRCUIT BOARD
KEY BOARD CIRCUIT BOARD
PUSH SWITCH CIRCUIT BOARD

REPLACEMENT PARTS LIST

Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref No.	Part No.	Part Name & Description
		CABINET PARTS
G 1	QGC1225 "Silver Type"	Case Cover
	QGC1225K "Black Type"	Case Cover
G 2	QKA1086	Case Foot
G 3	QGK3217 "Silver Type"	Side Board
	QGK3217K "Black Type"	Side Board
G 4	QGO2050	Intro Search Button
G 5	QGK3281 "Silver Type"	Meter Cover
	QGK3281K "Black Type"	Meter Cover
G 6	QGL1174	Filter
G 7	QYB0416	Bottom Cover Assembly
G 8	QYP1107 "Silver Type"	Front Panel Assembly
	QYP1107K "Black Type"	Front Panel Assembly
G 9	QBC1159	Button Spring
G 10	QGG0194	Button Holder
G 11	QXB0763	Play Button Assembly
G 12	QXB0762	Pause Button Assembly
G 13	QXB0761	Rec Button Assembly
G 14	QGO1984 "Silver Type"	Operation Button (Rec Mute)
	QGO1984Y "Black Type"	Operation Button (Rec Mute)
G 15	QGO1981 "Silver Type"	Operation Button (Fast Forward)
	QG01981Y "Black Type"	Operation Button (Fast Forward)
G 16	QGO1980 "Silver Type"	Operation Button (Rewind)
	QGO1980Y "Black Type"	Operation Button (Rewind)
G 17	QGO1982 "Silver Type"	Operation Button (Stop)
	QGO1982Y "Black Type"	Operation Button (Stop)
G 18	QGO1983	Push Button (Conunter Reset)
G 19	QYF0562 "Silver Type"	Cassette Lid Assembly
	QYF0562K "Black Type"	Cassette Lid Assembly
G 20	QGT1571	Volume Knob-B
G 21	QYT0640	Volume Knob-A
G 22	QGT1569	Select Knob
G 23	QGO1985S	Function Button
G 24	QGO1987	Timer Button
G 25	QGO1986	Power Button
G 26	QMR1985	Power Rod
G 27	QJC0047	Earth Plate-A
G 28	QKJ0514	Operation P.B Holder
G 29	QKM1547	Chassis
G 30	QKJ0513	Meter Holder
G 31	QTS1572	Meter Shield Plate
G 32	XTB4 + 10BFN "Silver Type"	Screw ⊕4 × 10
	XTB4 + 10BFZ "Black Type"	Screw ⊕4 × 10
G 33	QJC0048	Earth Plate-B
G 34	QMA4360	Volume Angle
G 35	QNQ1070	Nut
G 36	QNQ1033	Nut 9φ
G 37	QNQ1004	Nut 8φ
G 38	QMA4361	Headphone Angle
G 39	XTS3 + 12B	Tapping Screw ⊕3 × 12
G 40	XTN3 + 10B	Tapping Screw ⊕3 × 10
G 41	XTN26 + 8B	Tapping Screw ⊕2.6 × 8
G 42	XTN3 + 8B	Tapping Screw ⊕3 × 8
G 43	XTS26 + 8B	Tappping Screw ⊕2.6 × 8
G 44	QWA26B	Washer
G 45	XWA26B	Washer 26φ
G 46	XTN3 + 6B	Tapping Screw ⊕3 × 6
G 47	QMA4362	Switch Angle
G 48	XSN3 + 8S	Screw ⊕3 × 8
G 49	XWE3	Washer 3φ
G 50	QTS1579	Insulator Plate
G 51	XWG3	Washer 3φ
G 52	QBS1140	Connection Wire
G 53	QMA4434	NR P.B Holding Angle-L
G 54	QMA4435	NR P.B Holding Angle-R
G 56	QJC0052	Earth Plate-C
G 57	XTS3 + 10B	Tapping Screw ⊕3 × 10
G 58		
[DB]	QTD1164	Cord Bushing
[For all European areas.]		
G 59	QJC0053	Earth Plate-D
G 60	QTH1162	Heat Sink-A
G 61	QTH1163	Heat Sink-B
G 62	QKJ0515	LED Holder-A
G 63	QKJ0516	LED Holder-B
G 64	QKJ0541	Switch Rod-A
G 65	QKJ0542	Switch Rod-B
G 67		
[DB]	XTN3 + 12B	Tapping Screw ⊕3 × 12
[For all European areas.]		
G 68	QTW1277	Shield Plate
G 69 [D]	QGS3018	Main Name Plate
[For all European areas except United Kingdom.]		
[B]	QGS3019	Main Name Plate
[For United Kingdom.]		
[N]	QGS3021	Main Name Plate
[For Asia, Latin America, Middle East and Africa areas.]		
G 70 [N]	QTD1129	Cord Bushing
[For Asia, Latin America, Middle East and Africa areas.]		
		ACCESSORIES
A 1	QEB0125	Stereo Pin Cord
A 2 [D]	QQT3313	Instruction Book
[For all European areas except United Kingdom.]		
[B]	QQT3314	Instruction Book
[For United Kingdom.]		
[N]	QQT3335	Instruction Book
[For Asia, Latin America, Middle East and Africa areas.]		
A 3		
[N] ⚠	QJP0603S	AC Plug Adaptor
[For Asia, Latin America, Middle East and Africa areas.]		
		PACKINGS
P 1	QPN4333	Inside Carton
P 2	QPA0673	Cushion-A
P 3	QPA0674	Cushion-B
P 4	XZB50X65A02	Poly Bag
P 5	QPC0072	Sheet
P 6	QPA0662	Spacer

WIRING CONNECTION DIAGRAM

NOTES:
- [D] ..... For all European areas except United Kingdom.
- [B] ..... For United Kingdom.
- [N] ..... For Asia, Latin America, Middle East and Africa areas.

5 dbx CIRCUIT BOARD

3 HEADPHONES CIRCUIT BOARD

(Metal) S607

TAPE SELECT SWITCH

(CrO_2) S606

AC POWER VOLTAGE SELECT SWITCH (S402) CIRCUIT BOARD

AC POWER TRANSFORMER

AC POWER CORD

1 MAIN CIRCUIT BOARD

6 POWER TRANSFORMER CIRCUIT BOARD

4 DOLBY CIRCUIT BOARD

7 VOLTAGE REGULATOR CIRCUIT BOARD

LUG TERMINAL

LEAF SWITCH

S602 S603 S604 S605 S601

12 LEAF SWITCH CIRCUIT BOARD

TAKEUP REEL

P2 P1

TRIGGER PLUNGER

BRAKE PLUNGER

RECORD/PLAYBACH HEAD

ERASE HEAD

ARMATURE COIL

8 FL METER CIRCUIT BOARD

13 KEY BOARD CIRCUIT BOARD

14 PUSH SWITCH CIRCUIT BOARD

2 LED CIRCUIT BOARD

D25 D26 D27 D28 D32 R24 D29 D30 D31

NOTES:
BLK .....Black
BLU .....Blue
BRN.....Brown
GRY.....Gray
GRN ...Green
L. BLU ...Light Blue
NIL .....No Color Mark
ORG ...Orange
PNK.....Pink
RED.....Red
SLD .....Shield Wire
VLT .....Violet
WHT.....White
YEL .....Yellow

NOTES:
- [D] ..... For all European areas except United Kingdom.
- [B] ..... For United Kingdom.
- [N] ..... For Asia, Latin America, Middle East and Africa areas.

(Metal) S607

TAPE SELECT SWITCH

(CrO_2) S606

AC POWER VOLTAGE SELECT SWITCH (S402) CIRCUIT BOARD

AC POWER TRANSFORMER

AC POWER CORD

F1 (T0.5A)

S401

6 POWER TRANSFORMER CIRCUIT BOARD

7 VOLTAGE REGULATOR CIRCUIT BOARD

LUG TERMINAL

ERASE HEAD

8 FL METER CIRCUIT BOARD

13 KEY BOARD CIRCUIT BOARD

14 PUSH SWITCH CIRCUIT BOARD

S513 S514 S511 S512 D514

LEAF SWITCH

S602 S603 S604 S605 S601

12 LEAF SWITCH CIRCUIT BOARD

S515

11 TIMER CIRCUIT BOARD

16 MECHANISM CONTROL CIRCUIT BOARD

TAKEUP REEL MOTOR

TRIGGER PLUNGER (P2)

BRAKE PLUNGER (P1)

L504 CHOKE COIL L505

L502 L503 C508

15 REEL MOTOR CIRCUIT BOARD

FG COIL

IC503

9 HALL IC CIRCUIT BOARD

PILOT LAMP

ARMATURE COIL

AMATEUR COIL F.P.C.

HALL ELEMENT

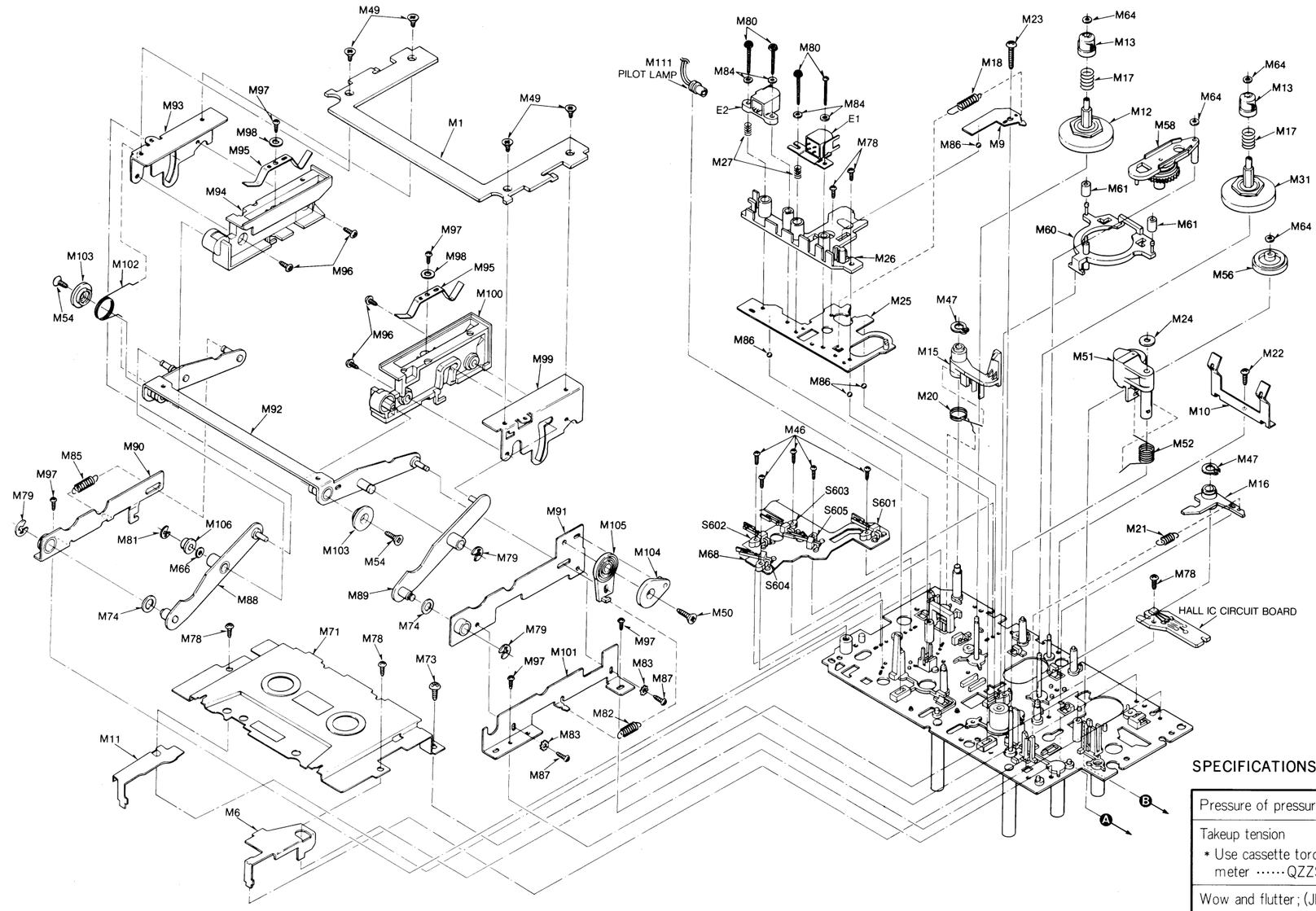
10 CAPSTAN MOTOR CIRCUIT BOARD

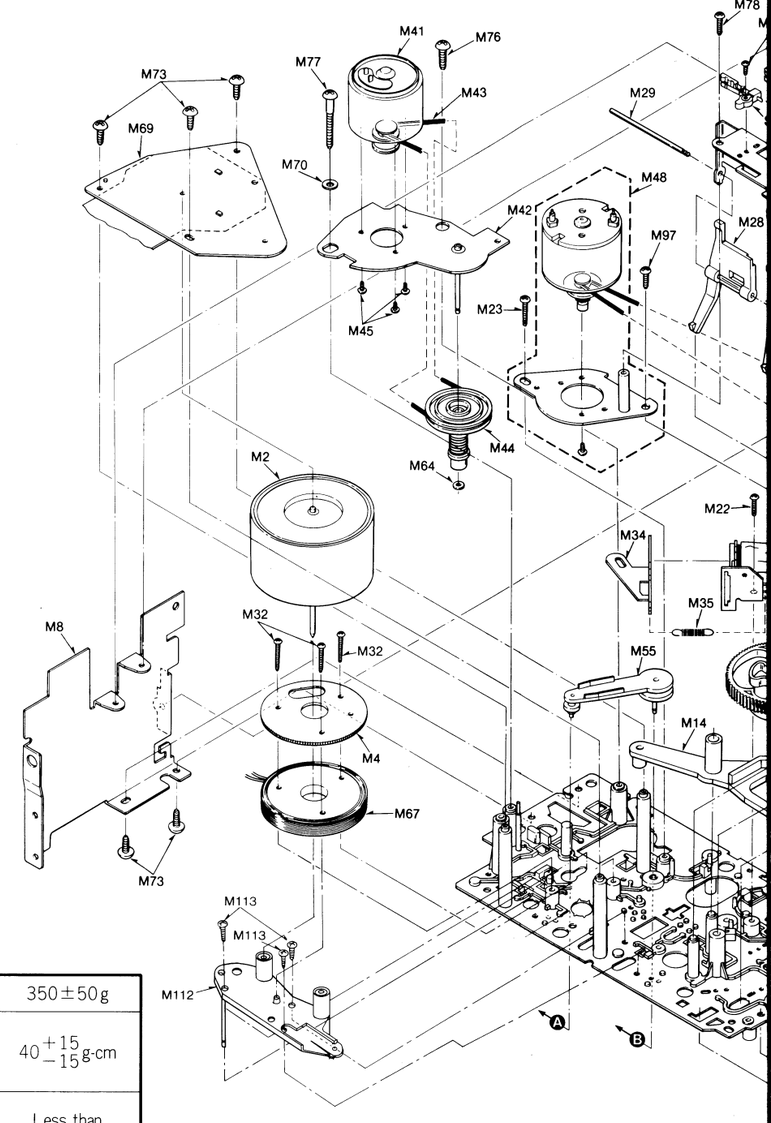
DOLBY NR RCH

DOLBY NR LCH

RS-M275X RS-M275X

MECHANICAL PARTS LOCATION



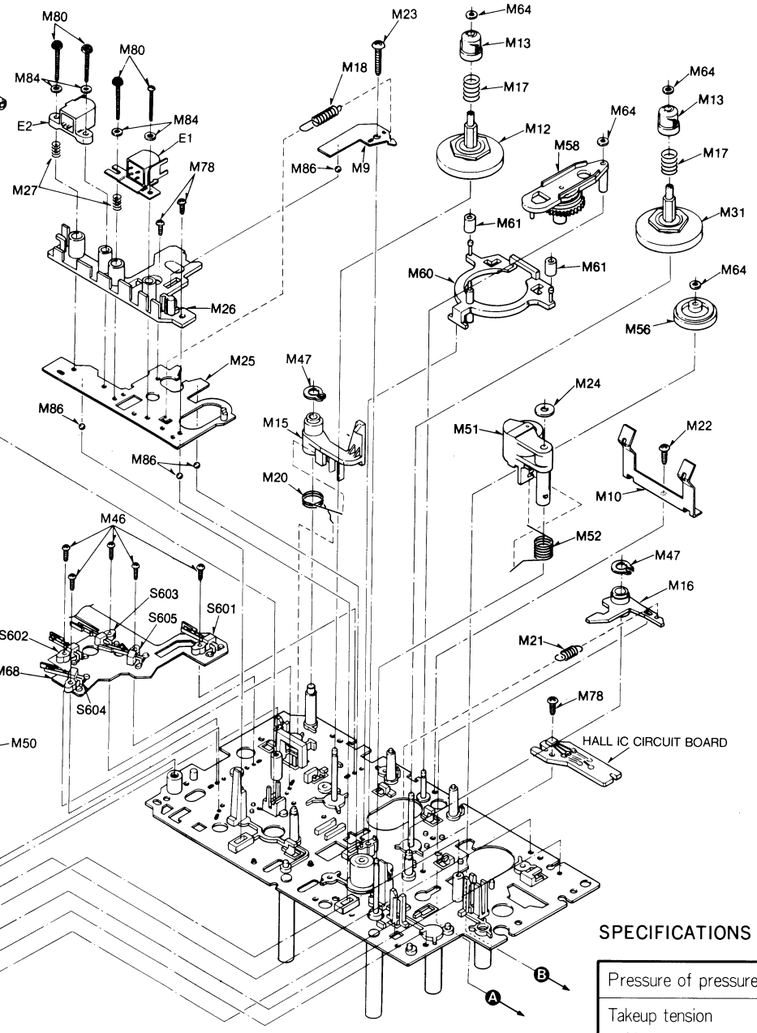


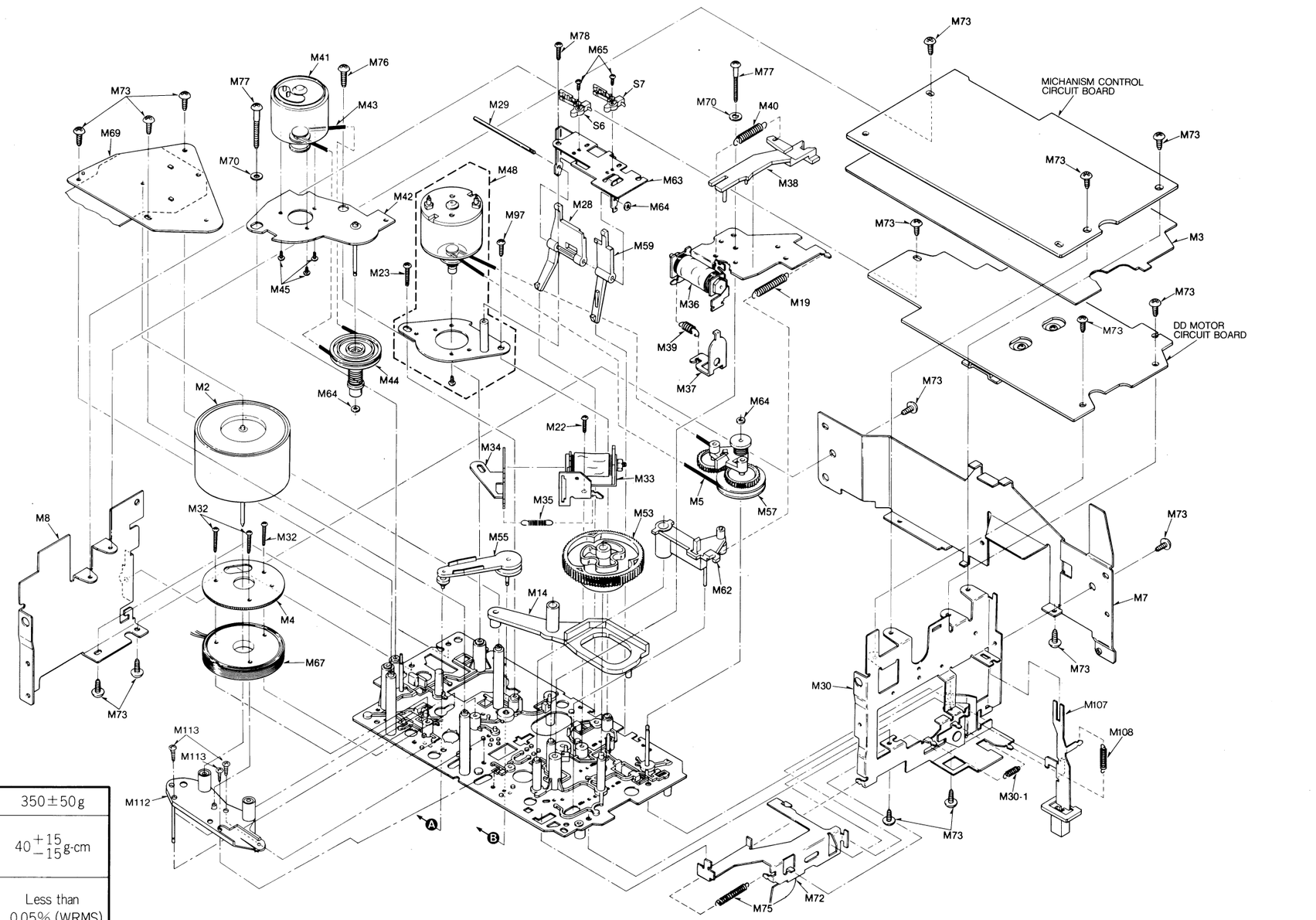
SPECIFICATIONS

Pressure of pressure roller	350±50g
Takeup tension * Use cassette torque meter ·····QZZSRKCT	40^{+15}_{-15} g-cm
Wow and flutter ; (JIS) * Use test tape ·····QZZCWAT	Less than 0.05% (WRMS)

REPLACEMENT PARTS LIST

Ref No.	Part No.	Part Name & Description
		MECHANICAL PARTS
M 1	QMF2234	Cassette Holder Plate
M 2	QXF0176	Flywheel Assembly
M 3	QTW1251	Insulating Sheet
M 4	QDG1128	F.G. Plate
M 5	QDB0287	Changing Belt
M 6	QMA4447	Reinforcement Angle-B
M 7	QMA4085	Center Angle
M 8	QMA4087	Side Angle-R
M 9	QBP1894	Head Spring
M 10	QBP1895	Cassette Pressure Spring
M 11	QMA4448	Reinforcement Angle-A
M 12	QDR1146	Supply Reel Table
M 13	QMB1336	Reel Table Hub
M 14	QML3655	Cam Follower
M 15	QML3661	Erase Safety Lever
M 16	QML3660	Idler Select Lever
M 17	QBC1373	Reel Table Spring
M 18	QBT1927	Head Base Plate Return Spring
M 19	QBT1933	Lock Lever Spring
M 20	QBN1772	Erase Safety Lever Spring
M 21	QBT1920	Idler Spring
M 22	XTN26+8B	Tapping Screw ⊕2.6×8
M 23	XTN26+12B	Tapping Screw ⊕2.6×12
M 24	QBW2046	Snap Washer
M 25	QMK1867	Head Base Plate
M 26	QMZ1263	Head Spacer
M 27	QBC1103	Head Spring
M 28	QML3717	Tape Detection Lever (for Metal Tape)
M 29	QMN2642	Detection Lever Shaft
M 30	QXA1216	Side Angle
M 30-1	QBT1920	Intermediate Lever Spring
M 31	QXD0120	Takeup Reel Table Assembly
M 32	XTN2+10B	Tapping Screw ⊕2×10
M 33	QXA1232	Brake Plunger Assembly
M 34	QML3865	Plunger Lever
M 35	QBT1955	Brake Spring
M 36	QXA1076	Trigger Plunger Assembly
M 37	QML3800	Trigger Plunger Lever
M 38	QML3653	Control Lever
M 39	QBT1938	Lock Spring
M 40	QBT1278	Record Lock Lever Spring
M 41	QXU0251	Takeup Reel Motor Assembly
M 42	QXA1077	Motor Retainer Assembly
M 43	QDB0286	Takeup Belt
M 44	QXP0621	Takeup Pulley
M 45	XSN26+3	Screw ⊕2.6×3
M 46	XTN2+5B	Tapping Screw ⊕2×5
M 47	XUB4FT	Stop Ring 4φ
M 48	QXU0250	Reel Motor Assembly
M 49	XSS26+4BV	Screw ⊕2.6×4
M 50	XSS26+8	Screw ⊕2.6×8
M 51	QXL1406	Pressure Roller Assembly
M 52	QBN1771	Pressure Roller Spring
M 53	QXG1059	Main Gear Assembly
M 54	XTS26+8B	Screw ⊕2.6×8
M 55	QXL1423	Idler Lever Assembly
M 56	QXi0116	Takeup Idler
M 57	QXL1408	Swing Gear Lever Assembly
M 58	QXL1409	Fast Wind Arm Assembly
M 59	QML3716	Tape Detection Lever (for Normal/CrO_2 Tape)
M 60	QML3659	Brake Lever
M 61	QBG1132	Brake Lever
M 62	QXL1411	Lock Lever Assembly
M 63	QMA4072	Auto Tape Selector Angle
M 64	QBW2008	Snap Washer
M 65	XTN2+6B	Tapping Screw ⊕2×6
M 66	QBW2014	Washer
M 67	QXQ0123	F.G Coil Assembly
M 68	QJi1466RR	Leaf Switch F.P.C (for S601, 602, 603, 604, 605)
M 69	QXK2560	Amature Coil Assembly (with H1, H2 and F.P.C)
M 70	XWG3	Washer 3φ
M 71	QXH0410	
M 72	QML3772	
M 73	XTN3+6	
M 74	QBW2020	
M 75	QBT1725	
M 76	XTN3+10	
M 77	XTN3+24	
M 78	XTN26+5	
M 79	XUC3FT	
M 80	XSN2+16	
M 81	XUC2FT	
M 82	QBT1931	
M 83	XWA3B	
M 84	XWG2	





SPECIFICATIONS

Pressure of pressure roller	350±50g
Takeup tension * Use cassette torque meter ·····QZZSRKCT	40^{+15}_{-15} g·cm
Wow and flutter; (JIS) * Use test tape ·····QZZCWAT	Less than 0.05% (WRMS)

Ref No.	Part No.	Part Name & Description
M 26	QMZ1263	Head Spacer
M 27	QBC1103	Head Spring
M 28	QML3717	Tape Detection Lever (for Metal Tape)
M 29	QMN2642	Detection Lever Shaft
M 30	QXA1216	Side Angle
M 30-1	QBT1920	Intermediate Lever Spring
M 31	QXD0120	Takeup Reel Table Assembly
M 32	XTN2+10B	Tapping Screw ⊕2×10
M 33	QXA1232	Brake Plunger Assembly
M 34	QML3865	Plunger Lever
M 35	QBT1955	Brake Spring
M 36	QXA1076	Trigger Plunger Assembly
M 37	QML3800	Trigger Plunger Lever
M 38	QML3653	Control Lever
M 39	QBT1938	Lock Spring
M 40	QBT1278	Record Lock Lever Spring
M 41	QXU0251	Takeup Reel Motor Assembly
M 42	QXA1077	Motor Retainer Assembly
M 43	QDB0286	Takeup Belt
M 44	QXP0621	Takeup Pulley
M 45	XSN26+3	Screw ⊕2.6×3
M 46	XTN2+5B	Tapping Screw ⊕2×5
M 47	XUB4FT	Stop Ring 4φ
M 48	QXU0250	Reel Motor Assembly
M 49	XSS26+4BV	Screw ⊕2.6×4
M 50	XSS26+8	Screw ⊕2.6×8
M 51	QXL1406	Pressure Roller Assembly
M 52	QBN1771	Pressure Roller Spring
M 53	QXG1059	Main Gear Assembly
M 54	XTS26+8B	Screw ⊕2.6×8
M 55	QXL1423	Idler Lever Assembly
M 56	QXi0116	Takeup Idler
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M 59	QML3716	Tape Detection Lever (for Normal/CrO_2 Tape)
M 60	QML3659	Brake Lever
M 61	QBG1132	Brake Lever
M 62	QXL1411	Lock Lever Assembly
M 63	QMA4072	Auto Tape Selector Angle
M 64	QBW2008	Snap Washer
M 65	XTN2+6B	Tapping Screw ⊕2×6
M 66	QBW2014	Washer
M 67	QXQ0123	F.G Coil Assembly
M 68	QJi1466RR	Leaf Switch F.P.C (for S601, 602, 603, 604, 605)
M 69	QXK2560	Amature Coil Assembly (with H1, H2 and F.P.C)
M 70	XWG3	Washer 3φ
M 71	QXH0410	Mechanism Cover
M 72	QML3772	Lock Lever
M 73	XTN3+6B	Tapping Screw ⊕3×6
M 74	QBW2020	Washer
M 75	QBT1725	Cleaning Spring
M 76	XTN3+10B	Tapping Screw ⊕3×10
M 77	XTN3+24B	Tapping Screw ⊕3×24
M 78	XTN26+5B	Tapping Screw ⊕2.6×5
M 79	XUC3FT	Stop Ring 3φ
M 80	XSN2+16	Screw ⊕2×16
M 81	XUC2FT	Stop Ring 2φ
M 82	QBT1931	Link Lever Spring-R
M 83	XWA3B	Washer 3φ
M 84	XWG2	Washer 2φ
M 85	QBT1932	Link Lever Spring-L
M 86	QDK1012	Steel Ball
M 87	XSN3+6S	Tapping Screw ⊕3×6
M 88	QXL1450	Link Lever-L Assembly
M 89	QXL1451	Link Lever-R Assembly
M 90	QXA1137	Angle-L Assembly
M 91	QXH0361	Angle-R Assembly
M 92	QXL1452	Center Lever Assembly
M 93	QMA4115	Holder Angle-L
M 94	QMH2070	Cassette Holder-L
M 95	QBP1925	Holder Spring
M 96	XSN26+4BV	Screw ⊕2.6×4
M 97	XTN26+6B	Tapping Scarew ⊕2.6×6
M 98	XWG26B	Washer
M 99	QMA4114	Holder Angle-R
M 100	QMH2069	Cassette Holder-R
M 101	QMA4112	Angle-R
M 102	QBN1827	Holder Spring-L
M 103	QKJ0465	Damper cover
M 104	QDP1892	Damper Pulley-1
M 105	QDP1893	Damper Pulley-2
M 106	QDP1894	Roller
M 107	QXL1536	Eject Button Assembly
M 108	QBT1932	Eject Lever Spring
M 111	XAMQ44P200	Pilot Lamp
M 112	QXM0176	Holder (for Capstan and Pressure Roller Lever)
M 113	XTN26+6B	Tapping Screw ⊕2.6×6

ARD
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D DK B BK N NK
Printed in Japan

ORDER NO. ARD83110311S8-01

Service Manual

Supplement-1

Cassette Deck

dbx* -Equipped Direct Drive Stereo Cassette Deck

RS-M275X

(Silver Face / Black Face)

** DOLBY B•C NR

RS-M250 MECHANISM SERIES

- For D B N mark areas, use this manual together with the service manual for model No. RS-M275X (Original) order No. ARD82050141C8-24.
- For A mark areas, use this manual together with the service manual for model No. RS-M275X (Original) order No. ARD82070178A3-01.

This is the Service Manual for the following areas.

D ...For all European areas except United Kingdom.

B ...For United Kingdom.

N ...For Asia, Latin America, Middle East and Africa areas.

A ...For Australia.

PARTS COMPARISON TABLE:

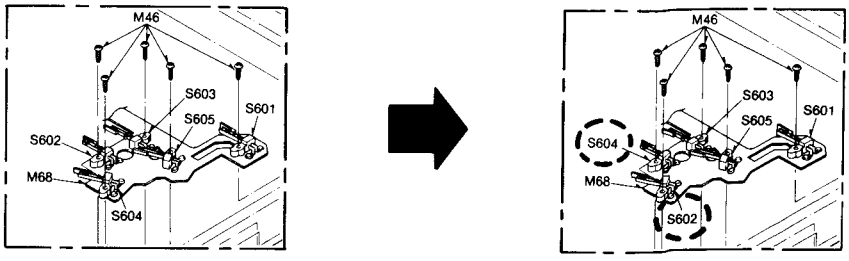
Please revise the original parts list in the Service Manual (RS-M275X) to conform to the changes shown herein.
If new part numbers are shown, be sure to use them when ordering parts.

Ref. No.	Part Name & Description	Part Numbers	
		Former Type	**New Type**
G2	Case Foot	QKA1086	**QKA1094**
M58	Fast Wind Arm Assembly	QXL1409	**QXL1604**

MEASUREMENT AND ADJUSTMENT METHODS (Correction)

ITEM	MEASUREMENT & ADJUSTMENT
❶ **Dolby NR circuit** Condition: * Record/playback mode * NR switch...OUT/B/C * Input level controls ...MAX Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω) * Test tape...QZZCFM	**Checking Dolby circuit frequency response** **• Dolby-B (Encoding characteristics check)** 1. Make connections as shown in fig. 19. 2. Set the NR switch to OUT and set the unit to the record mode. 3. Apply a 400Hz signal from the LINE IN, and adjust the ATT so that the output signal level at LINE OUT is 17.5mV. 4. Change the input signal frequency to 1kHz, and set the output signal level at TP804 to 0dB. Measure the level when the NR switch is set to B, and check that the level difference is 6±1.5dB. 5. Check the level difference in the same way as step 4 above using a 5kHz signal. The output signal level difference between Dolby-B IN and OUT should be 8±1.5dB.

MECHANICAL PARTS LOCATION (Correction)



*The term dbx is a registered trademark of dbx Inc.
**'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

(ARD,H.M) Printed in Japan

ORDER NO. ARD82020091S2-02

Service Manual

Supplement-1

Cassette Deck

RS-M273

(Silver Face / Black Face)

Microprocessor Controlled Cassette Deck
with 3-Head, Closed Loop System

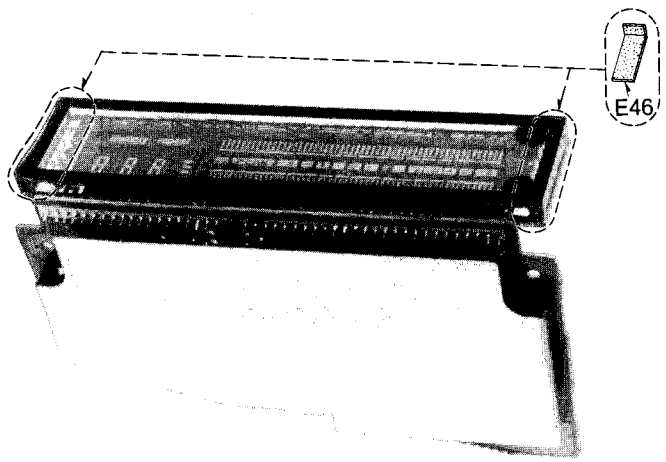
DOLBY SYSTEM

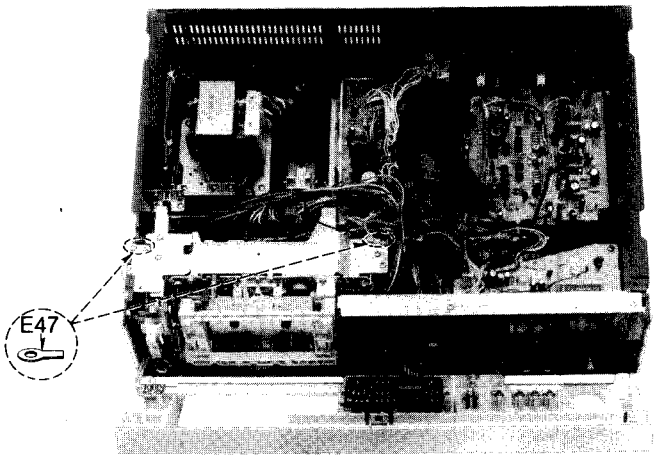
This is the Service Manual for the following areas.
[D] ····· For all European areas except United Kingdom.
[B] ····· For United Kingdom.

Please use this manual together with the service manual for model No. RS-M273 (original) order No. ARD81090091C2-23.

ELECTRICAL PARTS LOCATION

(ADDITION)





* 'Dolby' and the double-D symbols are trademarks of Dolby Laboratories.

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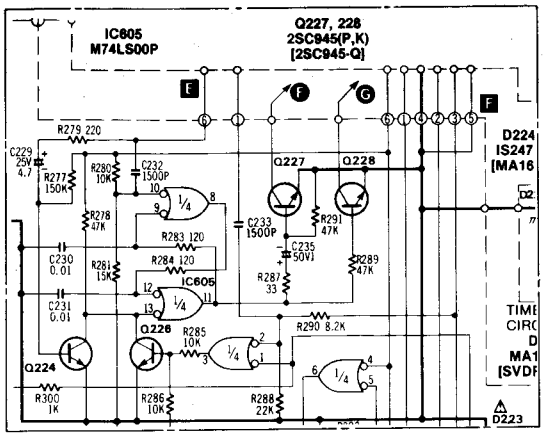
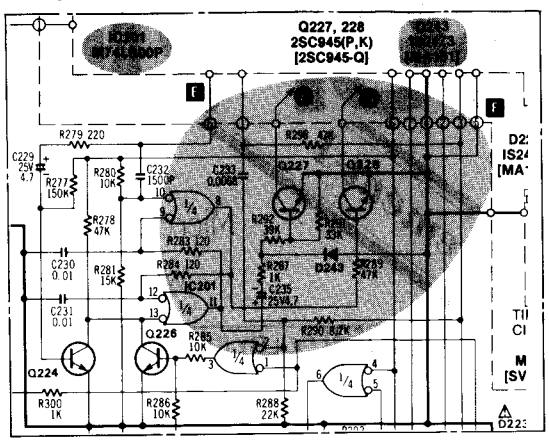
Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

SCHEMATIC DIAGRAM

Main Section (DIFFERENCE)



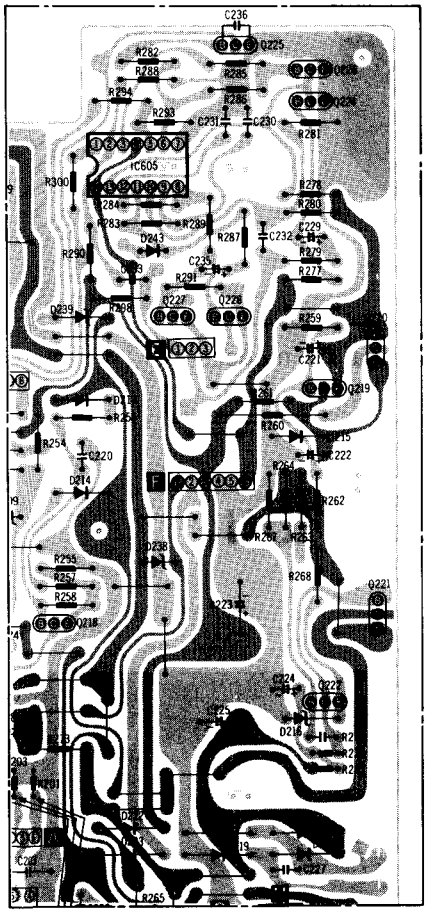
Former Type



New Type

CIRCUIT BOARDS

Main Circuit Board (DIFFERENCE)



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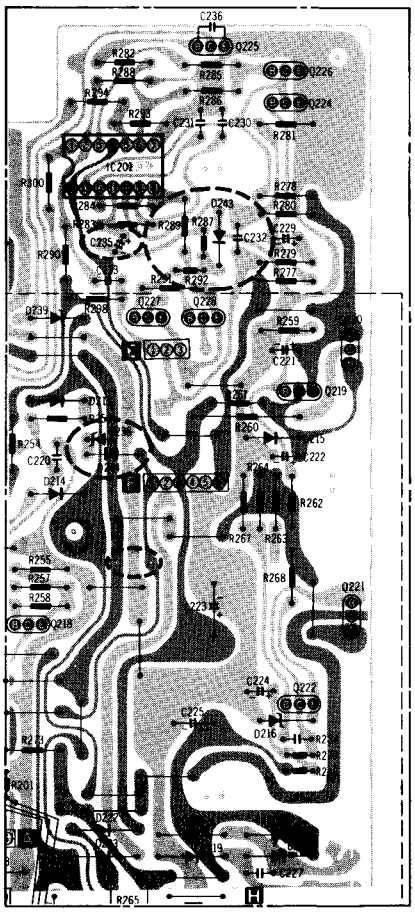
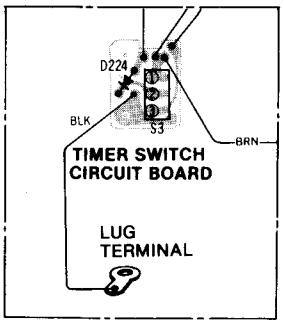
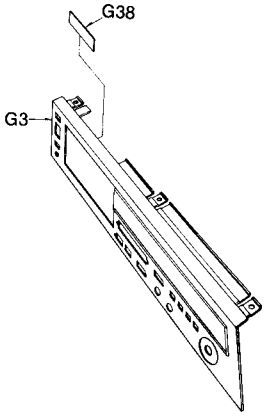


New Type

WIRING CONNECTION DIAGRAM (ADDITION)

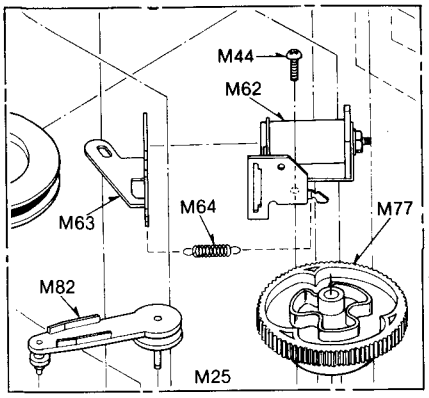


CABINET PARTS LOCATION (ADDITION)



MECHANICAL PARTS LOCATION

(DIFFERENCE)



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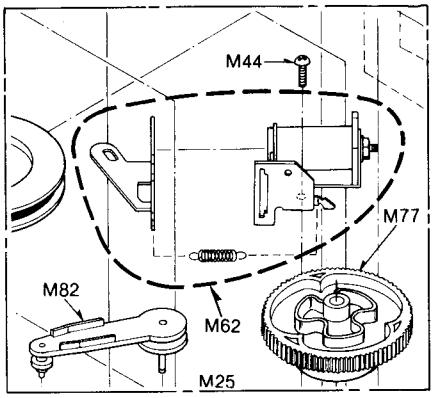
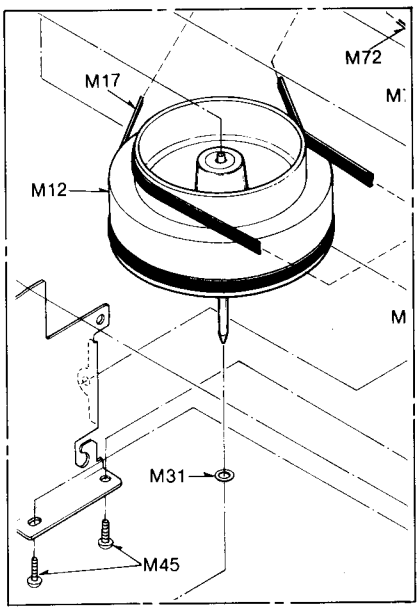


New Type

(ADDITION)



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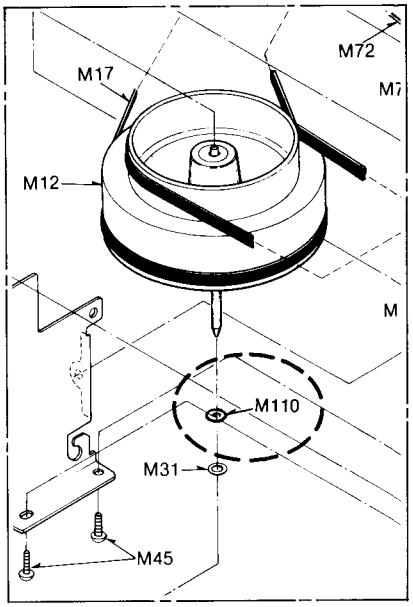

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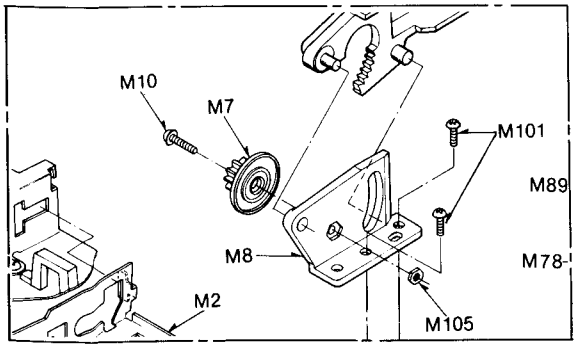
(ADDITION)



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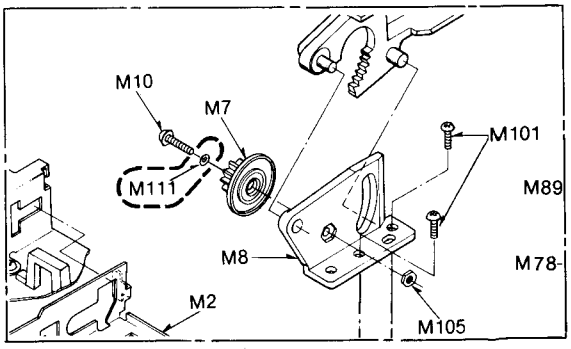

New Type

PARTS COMPARISON TABLE:

Please revise the original parts list in the Service Manual to conform to the changes shown herein.
If new parts number are shown, be sure to use them when ordering parts.

Important safety notice.
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Parts Name & Description	Parts Number		Remarks
		Former Type	**New Type**	
M10	Screw ⊕2.6×8	XTN26+8	**XSN26+8**	
M26	Lever (Detector)	QML3611	**QML3661**	
M62	Angle Assembly (with Plunger)	QXA1075	**QXA1072**	
M63	Lever (for Plunger)	QML3650	———	Deleted
M64	Spring	QBT1924	———	Deleted
M70	Capstan Motor	QXU0268	**QXU0269**	
M80	Pressure Roller Lever-R	QXL1406	**QXL1532**	
M80-1	Pressure Roller Spring	QBN1771	**QBN1884**	
M110	Washer	———	**QBJ3221**	Added
M111	Washer 2.6ϕ	———	**XWG26**	Added
R137, 138	Resistor	ERO25TKG2003 (200kΩ)	**ERO25CKG2003 (200kΩ)**	
R157	Resistor	ERD25FJ221 (220Ω)	**ERQ14AJ181P (180Ω)**	
R167, 168	Resistor	ERD25FJ330 (33Ω)	**ERD25FJ101 (100Ω)**	
R235	Resistor	ERD25TJ183 (18kΩ)	**ERD25TJ393 (39kΩ)**	
R236	Resistor	ERD25FJ562 (5.6kΩ)	**ERD25FJ472 (4.7kΩ)**	
R237	Resistor	ERD25FJ682 (6.8kΩ)	**ERD25FJ472 (4.7kΩ)**	
R253	Resistor	ERD25TJ273 (2.7kΩ)	**ERD25TJ104 (100kΩ)**	
R256	Resistor	ERD25FJ122 (1.2kΩ)	**ERD25FJ272 (2.7kΩ)**	
R264	Resistor	ERO25KF1502 (15kΩ)	**ERO25CKF1502 (15kΩ)**	
R269	Resistor	ERG1ANJ3R9 (3.9Ω)	———	Deleted
R273	Resistor	ERQ12AJ181P (180Ω, 1/2W)	**ERD25FJ271 (270Ω, 1/4W)**	
R287	Resistor	ERD25FJ330 (33Ω)	**ERD25FJ102 (1kΩ)**	
R289	Resistor	ERD25FJ473 (47kΩ)	**ERD25FJ102 (1kΩ)**	
R291	Resistor	ERD25TJ473 (47kΩ)	**ERD25TJ393 (39kΩ)**	
R292	Resistor	ERD25FJ103 (10kΩ)	**ERD25TJ393 (39kΩ)**	
R298	Resistor	———	**ERD25TJ473 (47kΩ)**	Added
R313, 314	Resistor	ERO25KG2702S (27kΩ)	**ERO25CKF2702S (27kΩ)**	
C5, 6	Capacitor	ECKD1H561KB (560pF)	**ECKD1H471KB (470pF)**	
C21	Capacitor	ECEA1ES101 (16V 100μF)	**ECEA1CS221 (16V 220μF)**	
C34	Capacitor	———	**ECQM1H273JZ (0.027μF)**	Added
C58	Capacitor	ECEA50Z3R3 (50V 3.3μF)	**ECEA50Z1 (50V 1μF)**	
C155, 156	Capacitor	ECQV05153JZ (0.015μF)	**ECQV05103JZ (0.01μF)**	
C206	Capacitor	ECQF6682KZH (0.0068μF)	**ECQM1H682JZ (0.0068μF)**	
C215	Capacitor	ECEA1CN100S (16V 10μF)	**ECEA1CN220S (16V 22μF)**	
C233	Capacitor	ECKD1H152KB (0.0015μF)	**ECQM1H682JZ (0.0068μF)**	
C235	Capacitor	———	**ECEA25Z4R7 (25V 4.7μF)**	Added
C301, 302	Capacitor	ECEA50Z3R3 (50V 3.3μF)	**ECEA50ZR22 (50V 0.22μF)**	
D238	Diode	RD5R6EB	**RD3R9EB**	
D243	Diode	———	**MA161**	Added
IC201	Integrated Circuit	———	**M74LS00P**	Added
IC606	Integrated Circuit	M74LS00P	———	Deleted
F1 ⚠	Fuse (T 1.6A)	XBA0010	**XBAQ0010**	
E1	Head (Record/Playback)	QWY4125ZA	**QWY4125W**	
E46	Meter Cushion	———	**QBMM0019**	Added
E47	Lug Terminal	———	**QTD1001**	Added
G17	Meter Cover "Silver Type"	QGLM0026	**QGLM0033**	
	Meter Cover "Black Type"	QGLM0026Y	**QGLM0033Y**	
G38	Spacer	———	**QGKM0167**	Added
P7	Spacer	———	**QPAM0051**	Added
P8	Pad	———	**QPS0434**	Added

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